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

October 28, 2021

ARKANSAS NUCLEAR ONE, UNITS 1 AND 2; GRAND GULF NUCLEAR STATION, UNIT 1; RIVER BEND STATION, UNIT 1; WATERFORD STEAM ELECTRIC STATION, UNIT 3 – APPROVAL OF REQUEST FOR ALTERNATIVE EN-20-RR-003 FROM CERTAIN REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (EPID: L-2020-LLR-0160)

LICENSEE INFORMATION

Recipient's Name and Address: Mrs. Mandy Halter
Vice President, Regulatory Assurance
Entergy Services, LLC
M-ECH-29
1340 Echelon Parkway
Jackson, MS 39213

Licensee: Entergy Operations, Inc.

Plant Names and Units: Arkansas Nuclear One, Units 1 and 2; Grand Gulf Nuclear Station, Unit 1; River Bend Station, Unit 1; Waterford Steam Electric Station, Unit 3

Docket Nos.: 50-313, 50-368, 50-416, 50-458, and 50-382

APPLICATION INFORMATION

Submittal Date: December 30, 2020

Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.: ML20365A088

Supplement Date(s): NA

Supplement ADAMS Accession No.: NA

Licensee Proposed Alternative No. or Identifier: EN-20-RR-003

Applicable Regulation: Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1)

Applicable Code Requirements: American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI coverage requirements described in Examination Categories B-F, B-J, Table IWB-2500, and Examination Categories C-F-1, C-F-2, Table IWC-2500. The licensee is also using ASME Code Case N-716-1, "Alternative Piping Classification and Examination Requirements, Section XI, Division 1."

Applicable Code Edition and Addenda: ASME Code, Section XI, 2007 Edition through 2008 Addenda.

Brief Description of the Proposed Alternative: The licensee has requested to apply the examination volumes described in ASME Code Case N-711-2, "Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds," in instances where coverage of the examination volumes do not meet the "essentially" 100 percent requirements due to configuration and material limitations (essentially 100 percent coverage is achieved when the applicable examination coverage is greater than 90 percent). The licensee also stated that they will follow the conditions placed on ASME Code Case N-711-1 in Regulatory Guide (RG) 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1" restricting the use of the code case for preservice examinations or when the postulated degradation mechanisms are primary water stress corrosion cracking (PWSCC) and crevice corrosion.

For additional details on the licensee's submittal, please refer to the document located at the ADAMS Accession No. identified above.

REGULATORY EVALUATION

Adherence to Section XI of the ASME Code is mandated by 10 CFR 50.55a(g)(4), "Inservice inspection standards requirement for operating plants," which states, in part, that ASME Code Class 1, 2, and 3 components will meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI.

Section 10 CFR 50.55a(z), "Alternative to codes and standards requirements," of 10 CFR states, in part, that alternatives to the requirements of 10 CFR 50.55a(b)-(h) may be used, when authorized by the Director, Office of Nuclear Reactor Regulation, if (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 licensee has submitted this request on the basis that a proposed alternative would provide an acceptable level of quality and safety.

TECHNICAL EVALUATION

The alternate inspection volumes described in ASME Code Case N-711-2 are chosen based on the locations where degradation and cracking are expected to occur and take features such as counterbore into account. While the inspection volumes in ASME Code Case N-711-1 are usually in different areas than those described in ASME Code, Section XI, these new inspection volumes in ASME Code Case N-711-2 are usually larger than those in ASME Code, Section XI.

ASME Code Case N-711-2 is very similar to ASME Code Case N-711-1, which is currently listed in RG 1.147 as conditionally approved for use. The conditions described in RG 1.147 are that Code Case N-711-1 shall not be used to redefine the required examination volume for preservice examinations or when the postulated degradation mechanism for piping welds is PWSCC or crevice-corrosion degradation mechanisms.

In ASME Code Case N-711-1, 100 percent of the alternative inspection volume must be examined, with no provision for missing small areas of the alternative inspection volume. This larger inspection volume and combined with the lack of flexibility for missing small amounts of the volume has made the implementation of ASME Code Case N-711-1 challenging in some instances. ASME Code Case N-711-2 makes only one change from Code Case N-711-1. In ASME Code Case N-711-2 the requirement is that the examinations performed are required to cover "essentially" 100 percent of the new inspection volume as opposed to 100 percent of the new inspection volume. This is a relatively small change and provides flexibility when performing and evaluating the examinations with no significant impact on the examination.

The proposed alternative EN-20-RR-003 states that the licensee will continue to comply with the U.S. Nuclear Regulatory Commission (NRC) conditions placed on the use of ASME Code Case N-711-1. The use of ASME Code Case N-711-2 will not be used to redefine the required examination volume for preservice examinations or when the postulated degradation mechanism for piping welds is PWSCC or crevice-corrosion degradation mechanisms.

As the change in ASME Code Case N-711-2 is minor, and the conditions for the use of Code Case N-711-1 will be followed by the licensee in this proposed alternative, the NRC staff determines that the licensee's proposed alternative is acceptable because it provides reasonable assurance that the reduction in inspection volume would not have a significant impact on the examinations ability to find flaws if they are present.

CONCLUSION

The NRC staff has determined that the proposed alternative in the licensee's request referenced above would provide an acceptable level of quality and safety.

The NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

The NRC staff authorizes the use of proposed alternative EN-20-RR-003 at Arkansas Nuclear One, Unit 1 to May 30, 2027; at Arkansas Nuclear One, Unit 2 to March 25, 2030; at Grand Gulf Nuclear Station, Unit 1 to November 30, 2026; and at River Bend Station, Unit 1 and Waterford Steam Electric Station, Unit 3 to November 30, 2027.

All other ASME BPV Code, Section XI requirements for which an alternative was not specifically requested and approved in this proposed alternative remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Stephen Cumblidge, NRR

Date: October 28, 2021

Jennifer L. Dixon-Herrity

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Jennifer L. Dixon-Herrity, Chief
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ARKANSAS NUCLEAR ONE, UNITS 1 AND 2; GRAND GULF NUCLEAR STATION, UNIT 1; RIVER BEND STATION, UNIT 1; WATERFORD STEAM ELECTRIC STATION, UNIT 3 – APPROVAL OF REQUEST FOR ALTERNATIVE EN-20-RR-003 FROM CERTAIN REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (EPID: L-2020-LLR-0160) DATED OCTOBER 28, 2021

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ADAMS Accession No. ML21299A003 ***concurrence via email**

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