



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

April 12, 2022

Mr. Terry J. Brown
Site Vice President
Energy Harbor Nuclear Corp.
Mail Stop P-DB-3080
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 — PROPOSED
ALTERNATIVE REQUEST RP-1 REGARDING DIGITAL INSTRUMENTATION
FOR INSERVICE TESTING (EPID L-2021-LLR-0070)

Dear Mr. Brown:

By letter dated September 20, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21263A193), Energy Harbor Nuclear Corp. (the licensee) submitted Request RP-1 in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to certain requirements of 10 CFR 50.55a, "Codes and standards," for Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse). The September 20, 2021, letter also submitted Requests RP-2, RP-3, and RP-4, which are being reviewed separately by the U.S. Nuclear Regulatory Commission (NRC) staff. Communications regarding the NRC staff's review of Requests RP-2, RP-3, and RP-4 will be provided through separate correspondence.

The American Society of Mechanical Engineers (ASME), *Operation and Maintenance of Nuclear Power Plants*, Division 1, Section IST (OM Code), as incorporated by reference in 10 CFR 50.55a, specifies requirements for the inservice testing (IST) of nuclear power plant components. Proposed alternative Request RP-1 would allow the licensee to use digital instruments for certain comprehensive pump testing that do not meet the selection criterion in subparagraph ISTB-3510(b)(2) of the 2017 Edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, for the fifth 10-year IST interval at Davis-Besse.

The regulations in 10 CFR 50.55a(z)(1) states, in part, that alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a may be authorized by the NRC if the licensee demonstrates that the proposed alternative provides an acceptable level of quality and safety. The NRC staff has reviewed Request RP-1 and concludes, as set forth in the enclosed safety evaluations, that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of proposed alternative Request RP-1 at Davis-Besse for the fifth 10-year IST interval, which is scheduled to begin on September 21, 2022, and end on September 20, 2032.

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

T. Brown

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If you have any questions, please contact Blake Purnell at 301-415-1380 or via e-mail at Blake.Purnell@nrc.gov.

Sincerely,

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

Docket No. 50-346

Enclosure:
Safety Evaluation

cc: Listserv

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1 — PROPOSED ALTERNATIVE REQUEST RP-1 REGARDING DIGITAL INSTRUMENTATION FOR INSERVICE TESTING (EPID L-2021-LLR-0070) DATED: APRIL 12, 2022

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED ALTERNATIVE REQUEST RP-1

ENERGY HARBOR NUCLEAR CORP.

ENERGY HARBOR NUCLEAR GENERATION LLC

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1.0 INTRODUCTION

By letter dated September 20, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21263A193), Energy Harbor Nuclear Corp. (the licensee) submitted Request RP-1 in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to certain requirements of 10 CFR 50.55a, "Codes and standards," for Davis-Besse Nuclear Power Station, Unit No. 1 (Davis-Besse). The letter also included three other requests that are being reviewed separately by the U.S. Nuclear Regulatory Commission (NRC) staff. This safety evaluation (SE) is only for Request RP-1.

The American Society of Mechanical Engineers (ASME), *Operation and Maintenance of Nuclear Power Plants*, Division 1, Section IST (OM Code), as incorporated by reference in 10 CFR 50.55a, specifies requirements for the inservice testing (IST) of nuclear power plant components. Proposed alternative Request RP-1 would allow the licensee to use digital instruments for certain comprehensive pump testing that do not meet the selection criterion in subparagraph ISTB-3510(b)(2) of the 2017 Edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, for the fifth 10-year IST interval at Davis-Besse. Pursuant to 10 CFR 50.55a(z)(1), the licensee requested the proposed alternative on the basis that it provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f)(4) state, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the IST requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that are incorporated by reference in 10 CFR 50.55a(a)(1)(iv), to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a may be authorized by the NRC if the licensee demonstrates that: (1) the proposed alternative provides 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

3.1 Licensee's Request

ASME Code Components Affected

- ASME Code Class 3, Group A, component cooling water pump Nos. P43-1, P43-2, and P43-3.
- ASME Code Class 2, Group B, high pressure injection pump Nos. P58-1 and P58-2.
- ASME Code Class 3, Group A, service water pump Nos. P3-1, P3-2, and P2-3.

Applicable Code Edition and Requirements

The applicable ASME OM Code edition for the fifth 10-year IST program interval at Davis-Besse is the 2017 Edition of ASME OM Code, as incorporated by reference in 10 CFR 50.55a with conditions. Subparagraph ISTB-3510(b)(2) of the ASME OM Code states: "Digital instruments shall be selected such that the reference value does not exceed 90% of the calibrated range of the instrument."

Reason for Request

The licensee stated, in part, that:

Plant process computer points may be used as digital instrumentation for inservice testing of pumps. The computer points may be used in lieu of the associated analog indicators in order to meet the ASME OM Code instrument accuracy requirements. In addition to using computer points, temporary digital instruments are also used as measuring and test equipment for pump testing. In some cases, the reference value exceeds 90 percent of the digital instruments calibrated range during comprehensive pump testing.

Proposed Alternative

The licensee proposes to select digital instruments to verify the required action levels of the ASME OM Code, Tables ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria," and ISTB-5221-1, "Vertical Line Shaft Centrifugal Pump Test Acceptance Criteria," such that the reference value shall not exceed 94 percent of the calibrated range for comprehensive pump testing. The licensee requested NRC authorization to use this proposed alternative for the duration of the fifth 10-year IST program interval at Davis-Besse, which is scheduled to begin on September 21, 2022, and end on September 20, 2032.

3.2 NRC Staff Evaluation

The licensee proposed an alternative to the digital instrumentation requirements in subparagraph ISTB-3510(b)(2) of the ASME OM Code for the comprehensive testing of the pumps listed in SE Section 3.1. The licensee stated, in part, that:

Plant process computer points or temporary digital instruments may be used for comprehensive pump testing. The computer points use permanent plant instrumentation as input, and by design, the ranges are selected to account for all expected operating and testing conditions. Surveillance tests are written such that the temporary instrumentation is not over-ranged. In addition, digital instrumentation is significantly less susceptible to damage from over-ranging, and the digital instrument is accurate throughout its full calibrated range.

Subparagraph ISTB-3510(b)(2) of the ASME OM Code requires that reference values of digital instruments do not exceed 90 percent of the calibrated range of the instrument. Tables ISTB-5121-1 and ISTB-5221-1 of the ASME OM Code list the acceptance criteria for comprehensive pump testing. These tables state that the maximum acceptable values for both the measured flow and differential pressure is 106 percent of the reference value.

For the proposed alternative to subparagraph ISTB-3510(b)(2) of the ASME OM Code, the licensee would select digital instruments for comprehensive pump testing such that the reference value would not exceed 94 percent of the calibrated range. The licensee stated, in part, that: "This ensures that when the digital instrument used during performance of comprehensive pump testing is reading the maximum action level of 106 percent of the reference value, the reading is within the calibrated range of the instrument."

The NRC staff determined that the proposed alternative for selecting digital instruments for the comprehensive pump testing is acceptable because the maximum acceptable values (i.e., 106 percent of the reference value) for both the measured flow and differential pressure would be within the calibrated range of the instruments. Therefore, the NRC staff finds that the proposed alternative provides an acceptable level of quality and safety for the comprehensive testing of the pumps listed in SE Section 3.1.

4.0 CONCLUSION

As set forth above, the NRC staff finds that proposed alternative for the selection of digital instruments for the comprehensive testing of the pumps listed in SE Section 3.1 will provide an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of proposed alternative Request RP-1 at Davis-Besse for the fifth 10-year IST interval, which is scheduled to begin on September 21, 2022, and end on September 20, 2032.

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

Principal Contributor: Y. Wong, NRR/DEX/EMIB

Date: April 12, 2022