



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

December 20, 2022

**DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 – AUTHORIZATION AND SAFETY
EVALUATION FOR ALTERNATIVE REQUEST I6R-01, (EPID: L-2022-LLR-0037)**

LICENSEE INFORMATION

Recipient's Name and Address: Mr. David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

Licensee: Constellation Energy Generation, LLC

Plant Name and Units: Dresden Nuclear Power Station (Dresden), Units 2 and 3

Docket Nos.: 50-237 and 50-249

APPLICATION INFORMATION

Submittal Date: March 25, 2022

Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.: ML22084A615

Supplement Date: August 10, 2022

Supplement ADAMS Accession No.: ML22223A087

Applicable Code Edition and Addenda: The code of record for the sixth 10-year ISI interval is 2017 Edition of the ASME Code, Section XI.

Applicable Inservice Inspection (ISI) Program Interval and Interval Start/End Dates: The sixth 10-year ISI interval is scheduled to begin on January 20, 2023, and end on January 19, 2033.

Alternative Provision: The licensee requested an alternative under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2).

ISI Requirement: For American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME BPV Code) Class 1 nozzles, the ISI requirements are specified in paragraph IWB-2411 of the ASME BPV Code, Section XI, which requires the licensee to perform volumetric examinations of the inside radii of reactor pressure vessel nozzles as specified in ASME BPV Code, Section XI, Table IWB-2500-1 (Examination Category B-D) once every 10-year ISI interval.

- Examination Category B-D, Item No. B3.100, Nozzle Inside Radius Section

Note (7) of Table IWB-2500-1 (B-D) allows a VT-1 visual examination of the nozzle inner radius in accordance with IWB-2500(g) in lieu of the volumetric examination. IWB-2500(g) references mathematical criteria in IWB-2500(f), which must be met in order to perform the visual examination in lieu of the volumetric examination. The U.S. Nuclear Regulatory Commission (NRC) conditioned IWB-2500(f) and (g) in 10 CFR 50.55a(b)(2)(xxi)(B) to require, in part, that the licensee maintain records demonstrating that the criteria in IWB-2500(f) are met, in the case that the licensee elects to perform the visual examination in lieu of the volumetric examination.

Brief Description of the Proposed Alternative: In Section 4 of I6R-01, Reason for Request, and Figure 16R-01.1, the licensee described the geometric configuration of the Dresden, Units 2 and 3, standby liquid control (SBLC) nozzles. The licensee stated that performing the required volumetric examination of the SBLC nozzles would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee proposed to perform a VT-2 visual examination of the SBLC nozzle as part of the Class 1 leakage test and maintain compliance with technical specification surveillance requirements for reactor coolant pressure boundary leakage, as an alternative to the volumetric examination.

For additional details on the licensee's request, please refer to the documents located at the ADAMS Accession Nos. identified above.

STAFF EVALUATION

The NRC staff evaluated the alternative request I6R-01 pursuant to 10 CFR 50.55a(z)(2). The staff's evaluation focused on whether compliance with the specified requirements of 10 CFR 50.55a(g), or portions thereof, would result in a hardship or unusual difficulty, without a compensating increase in the level of quality and safety.

Hardship Justification

The licensee cited several hardships for this case, including the need for low-angle ultrasonic probes, complex metallurgy due to the unique socket configuration of the nozzle, the lack of qualified ultrasonic equipment, and high dose exposure to the plant personnel performing the examination. The NRC staff reviewed these factors and determined that, taken all together, they do constitute a hardship.

As part of its review of the proposed alternative, the staff requested additional information on materials of construction, the examination history of the nozzle-to-vessel weld, the examination history of the subject nozzle inner radius, and the potential to perform a VT-1 examination in accordance with IWB-2500(g) of Section XI. In response, the licensee submitted the supplement dated August 10, 2022. The supplement stated that the reactor pressure vessel plates were fabricated out of SA-302 Grade B low-alloy steel and that the SBLC nozzle forging was fabricated out of SA-336 low-alloy steel. The licensee stated that the nozzle-to-vessel weld has

received four ultrasonic examinations with no identified indications. The licensee stated that, while the SBLC nozzle inner radius has not received ultrasonic examination, it has received the VT-2 examination. The licensee further stated that plant personnel have not identified any relevant conditions or signs of leakage as part of the VT-2 examination. Finally, the licensee stated that performance of the VT-1 in accordance with IWB-2500(g) of Section XI also presents a hardship due to the removal of vessel internal components that would be required to access to the SBLC nozzle inner radius location.

The examination history of the nozzle-to-vessel weld provides confidence in the performance of the nozzle inner radius since it was constructed with the similar materials and it experiences a similar environment as the nozzle inner radius location. Regarding the potential for a VT-1 examination, the NRC staff determined that removal of various lower plenum vessel internal components to perform the examination does constitute a hardship. Overall, the staff finds that the licensee's responses in the supplement dated August 10, 2022, are acceptable.

CONCLUSION

The NRC staff has determined that complying with the specified requirements described in the licensee's request would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The proposed alternative and the past examination history included in the supplement provide reasonable assurance about the structural integrity of the SBLC nozzle-to-vessel welds.

The NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(2).

The NRC staff authorizes the use of alternative request I6R-01, at Dresden, Units 2 and 3, for the sixth 10-year ISI interval which is scheduled to begin on January 20, 2023, and end on January 19, 2033.

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

Principal Contributor: M. Benson, NRR

Date: December 20, 2022

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

cc: Listserv

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DATED DECEMBER 20, 2022**

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