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

March 9,2018

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 – RELIEF REQUEST I5R-16 RE: APPROVAL OF ALTERNATIVE TO USE THE PERFORMANCE DEMONSTRATION INITIATIVE PROGRAM FOR WELD OVERLAY INSPECTION QUALIFICATIONS (EPID L-2017-LLR-0136)

Dear Mr. Hanson:

By letter dated November 7, 2017, (Agencywide Documents and Access Management System (ADAMS) Accession No. ML17312A293, supplemented by letter dated November 15, 2017, (ADAMS Accession No. ML17319A334), Exelon Generation Company, LLC (EGC, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) proposing the use of an alternative[1] to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Appendix VIII, Supplement 11[2], at Dresden Nuclear Power Station (DNPS) Units 2 and 3.

During a November 9, 2017, teleconference[3] between the NRC staff and the licensee, the licensee was granted verbal authorization to use the proposed alternative. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee proposed to follow the requirements of the Code Case N-653-1, which addresses weld overlay qualification requirements through the Performance Demonstration Initiative (PDI) on the basis that the alternative provides an acceptable level of quality and safety. The enclosed safety evaluation provides the technical basis for this authorization for the remainder of the fifth 10-year inservice inspection (ISI) interval at DNPS, scheduled to end on January 19, 2023.

All other requirements of ASME Code, Section XI, for which relief was not specifically requested and authorized by the NRC staff, remain applicable, including the third-party review by the Authorized Nuclear In-service Inspector.

[1] Code Case N-653-1, Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1.
[2] Qualification Requirements For Full Structural Overlaid Wrought Austenitic Piping Welds.
[3] Summary of Teleconference on November 9, 2017, Regarding Verbal Authorization of Relief Request to Use Alternative for Dresden Nuclear Power Station, Units 2 and 3 (EPID: L-2017-LLR-0136)," dated November 13, 2017 (Accession No. ML17317A900).

If you have any questions, please contact Mr. Russell Haskell at (301) 415-1129.

Sincerely,

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

Docket Nos. 50-237 and 50-249

Enclosure:
Safety Evaluation

cc w/encl: ListServ

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

SAFETY EVALUATION BY THE OFFICE NUCLEAR REGULATION

RE: RELIEF REQUEST FROM ASME CODE, SECTION XI, APPENDIX VIII, SUPPLEMENT 11 QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS AT DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

By letter dated November 7, 2017, (Agencywide Documents and Access Management System (ADAMS) Accession No. ML17312A293, supplemented by letter dated November 15, 2017, (ADAMS Accession No. ML17319A334), Exelon Generation Company, LLC (EGC, the licensee) submitted relief request (RR) I5R-16 to propose an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Appendix VIII, Supplement 11, "Qualification Requirements For Full Structural Overlaid Wrought Austenitic Piping Welds," at Dresden Nuclear Power Station (DNPS), Units 2 and 3.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee proposed to follow the requirements of the Code Case N-653-1, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1," which addresses weld overlay qualification requirements through the Performance Demonstration Initiative (PDI) on the basis that the alternative provides an acceptable level of quality and safety.

On November 9, 2017 (ADAMS Accession No. ML17317A900), the NRC staff verbally authorized the use of RR I5R-16 for the fifth 10-year inservice inspection (ISI) interval at DNPS, Units 2 and 3, scheduled to end January 19, 2023.

2.0 REGULATORY REQUIREMENTS

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for

Inservice Inspection of Nuclear Power Plant Components," to the extent practical, within the limitations of design, geometry, and materials of construction of the components.

However, 10 CFR 50.55a(z) states, in part, that alternatives to the requirements of paragraph (g) may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if the licensee demonstrates that: (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 the use of an alternative and the NRC to authorize the proposed alternative.

3.0 TECHNICAL EVALUATION

3.1 ASME Code Component Affected

The components covered in this RR are various Class 1 Pressure Retaining Piping Welds subject to ultrasonic (UT) examination using procedures, personnel, and equipment qualified by demonstration to ASME Code, Section XI, Appendix VIII, Supplement 11.

3.2 ASME Code Requirements

The code of record for the fifth 10-year ISI interval is the 2007 Edition with 2008 Addenda of ASME Code, Section XI, "Rules for In-service Inspection of Nuclear Power Plant Components."

The provision of Article IWA-4000 and Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," of the ASME Code, Section XI, 2007 Edition, with the 2008 Addenda are applicable to the subject welds.

Section XI of ASME Code Case N-653-1 provides alternative requirements for qualification requirements for detection and length and depth sizing for both service-induced and fabrication-induced flaws governed by ASME Code, Section XI, Appendix VIII, Supplement 11.

3.3 Licensee's Proposed Alternative to the ASME Code

The licensee requests authorization to use the Performance Demonstration Initiative (PDI) program for weld overlay inspection qualifications as an alternative to the requirements within the 2001 Edition ASME Code, Section XI, Appendix VIII, Supplement 11.

3.4 Reason for Proposed Alternative

The licensee stated that during the DNPS, Unit 2, Refueling Outage (i.e., D2R25), recordable UT indications were identified in Weld JP1A/N20A-6.[1] As a result of these indications, a full structural weld overlay (FSWOL) is being applied to the existing weld in accordance with the requirements of ASME Code, Section XI. The FSWOL will entail welding of austenitic stainless steel piping using austenitic stainless steel weld metal. The licensee further stated that FSWOL will comply with all the requirements of Nonmandatory, Appendix Q, of ASME Code, Section XI, 2007 Edition with 2008 Addenda. After application of the FSWOL, the preservice and inservice examinations will be performed in accordance with the requirements of Q-4300. The FSWOL

[1] Weld JP1A/N20A-6 - Reducer-to-pipe weld on the Unit 2 "A" Jet Pump Instrumentation Loop header.

requires liquid penetrant and UT examinations and the examination area of the weld overlay includes the newly applied weld reinforcement and the outer 25 percent of the underlying pipe wall.

For UT examinations, the PDI program is used by the licensees for the qualification of equipment, procedures, and personnel. The PDI program does not meet all aspects of the ASME Code requirements identified in Section XI, Appendix VIII, Supplement 11, of the 2007 Edition with Addenda through 2008. The basis for the implementation of the PDI program for Supplement 11 is described in Code Case N-653-1. The licensee proposes to use Code Case N-653-1 for performing UT examinations of the weld overlay repair of Weld JP1A/N20A-6.

3. 5 Licensee's Basis for Use

As a basis for its proposed alternative, the licensee proposed that in the context of assuring the quality of the weld overlay, there are no significant technical differences between the PDI program as described in ASME Code Case N-653-1 and the requirements of the 2007 Edition 2008 Addenda of ASME Code, Section XI, Appendix VIII, Supplement 11.

In its November 7, 2017, submittal, the licensee included the primary differences between the ASME Code, Section XI, Appendix VIII, requirements and the PDI program. Furthermore, the licensee stated that these differences had no impact on weld quality. The differences are:

1) In the PDI program, a scope statement has been added to reflect the applicability of Supplement 11.

2) In the PDI program, the names of the grading units were changed from base metal and overlay fabrication to inservice and preservice, respectively.

3) In the PDI program, the term base metal flaws was changed to service-induced flaws and the term overlay fabrication flaws was changed to fabrication-induced flaws.

4) In the PDI program, provisions have been added for qualification of "Optimized" weld overlays.

5) In the PDI program, qualification for width sizing of laminar flaws is addressed.

3. 6 Duration of the Alternative

The licensee stated this request will apply to the fifth 10-year ISI interval at DNPS, Units 2 and 3, which starts on January 20, 2013, and will continue to January 19, 2023.

3. 7 NRC Staff Evaluation of the Alternative

The licensee proposed to inspect the weld overlay in accordance with Code Case N-653-1 which addresses qualification requirements for the weld through the use of the PDI qualification program for weld overlay inspections in lieu of the requirements of ASME Code, Section XI, Appendix VIII, Supplement 11. The code case has been approved by the ASME Code but has not yet been included by the NRC in Regulatory Guide 1.147 or incorporated by reference in 10 CFR 50.55a. The use of this Code Case is, therefore, available to the licensee upon specific request. The licensee has proposed that the PDI program provides an acceptable level of quality and safety when compared with the ASME Code requirements.

The NRC staff also assessed the significance of these differences between Appendix VIII and the proposed qualification program. The differences between the two programs are primarily administrative in nature and would have no impact on the assessment of the quality of the weld.

Absent any technically significant differences with respect to the subject weld between the requirements of Code Case N-653-1 (the PDI program) and ASME Code, Section XI, Appendix VIII, Supplement 11, the NRC determined that using the PDI inspection qualification program in lieu of ASME Code, Section XI, Appendix VIII, Supplement 11, requirements provides an adequate level of rigor to provide reasonable assurance that the procedures, equipment, and personnel qualified under this program would be able to find fabrication flaws and service-induced flaws in weld overlays.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes RR I5R-16 at DNPS, Units 2 and 3, until the end of the fifth 10-year ISI interval at DNPS, scheduled to end on January 19, 2023.

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

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Date of issuance: March 9,2018

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