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

May 20, 2019

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
LaSalle County Station
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – RELIEF REQUEST I3R-15, RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL (ASME CODE), SECTION XI, "RULES FOR INSERVICE INSPECTION OF NUCLEAR POWER PLANT COMPONENTS" ASSOCIATED WITH THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (EPID-L-2018-LLR-0123)

Dear Mr. Hanson:

By letter dated September 19, 2018, as supplemented by letter dated April 2, 2019, Exelon Generation Company, LLC (EGC, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for relief from certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements at LaSalle County Station (LaSalle), Units 1 and 2, for the third inservice inspection interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(5)(iii), the licensee requested relief on the basis that conformance with these code requirements is impractical since conformance would require extensive structural modifications to the component or surrounding structure.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation that it is impractical for the licensee to comply with the requirements of ASME Code, Section XI. The licensee has demonstrated that the proposed alternative provides reasonable assurance of structural integrity or leak tightness of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). The NRC staff determines that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, the NRC staff grants RR No. I3R-15 at LaSalle, Units 1 and 2, for the third ISI interval which began on October 1, 2007, and ended on September 30, 2017.

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

If you have any questions, please contact the Project Manager Bhalchandra K. Vaidya at 301-415-3308.

Sincerely,

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

Docket Nos. 50-373 and 50-374

Enclosure: Safety Evaluation

cc: Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. I3R-15, REVISION 0,

REGARDING THE THIRD 10-YEAR INSERVICE

INSPECTION INTERVAL

EXELON GENERATION COMPANY, LLC

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By letter dated September 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18267A058), as supplemented by letter dated April 2, 2019, (ADAMS ML19092A239), Exelon Generation Company, LLC (EGC) submitted relief request (RR) No. I3R-15 to the U.S. Nuclear Regulatory Commission (NRC) for review and approval. The RR is applicable to the third 10-year inservice inspection (ISI) interval at LaSalle County Station (LaSalle) Units 1 and 2, and addresses examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components."

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g)(5)(iii), the licensee requested to use the proposed alternative on the basis that compliance with the ASME Code requirements is impractical for LaSalle.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except design and access provisions and preservice examination requirements, set forth in ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during 120-month inspection intervals subsequent to the first inspection interval comply with the latest edition and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(a) 12 months before the start of the 120-month inspection interval.

The regulations in 10 CFR 50.55a(g)(5)(iii) state that if licensees determine that conformance with an ASME Code requirement is impractical for its facility, the licensee must notify the NRC and submit information in support of its determination. Determinations of impracticality must be based on the demonstrated limitations experienced when attempting to comply with the ASME

Code requirements during the ISI interval for which the request is being submitted. Requests for relief must be submitted to the NRC no later than 12 months after the expiration of the 120-month inspection interval.

The regulations in 10 CFR 50.55a(g)(6)(i) state that the NRC will evaluate determinations that ASME Code requirements are impractical. The NRC may grant such relief and may impose such alternative requirements as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

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 Components Affected

The RR addresses the following components for the third ISI interval at LaSalle. The examination category and item numbers are from the ASME Code, 2001 Edition through 2003 Addenda.

LaSalle, Unit 1

Component ID	Weld Description	Examination Requirements	Examination Category / Item Number	Coverage Obtained
LCS-1-N1A	N1 Recirc Outlet Nozzle to Shell	IWB-2500-7	B-D B3.90	82.9%
LCS-1-N1B	N1 Recirc Outlet Nozzle to Shell	IWB-2500-7	B-D B3.90	83.6%
LCS-1-N3A	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.8%
LCS-1-N3B	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.8%
LCS-1-N3C	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.8%
LCS-1-N3D	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.8%
LCS-1-N2C	N2 Recirc Inlet Nozzle to Shell	IWB-2500-7	B-D B3.90	85.9%
LCS-1-N2D	N2 Recirc Inlet Nozzle to Shell	IWB-2500-7	B-D B3.90	85.9%
LCS-1-N16	N16 Core Spray Nozzle to Shell	IWB-2500-7	B-D B3.90	86.3%
LCS-1-N5	N5 Core Spray Nozzle to Shell	IWB-2500-7	B-D B3.90	86.3%
LCS-1-N6A	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	83.3%
LCS-1-N6B	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	83.3%
LCS-1-N6C	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	83.3%

LCS-1-N10	N10 CRD Return Nozzle to Shell	IWB-2500-7	B-D B3.90	88.1%
IRH-HX1B-08B	1B RHR HX Welded Attachment	IWC-2500-5	C-C C3-10	81.67%
LCS-1-BG	SC3 Long Seam @ 20° Az.	IWB-2500-2	B-A B1.12	84.3%
LCS-1-N7	N7 Top Head Spray Nozzle to Shell	IWB-2500-7	B-D B3.90	87%

LaSalle, Unit 2

Component ID	Weld Description	Examination Requirements	Examination Category / Item Number	Coverage Obtained
HP-PU2-04	Pump 2E22-C001 Welded Attachment	IWC-2500-5	C-C C3-30	16.0%
IMS-2044-13	18" Pipe to Valve Weld	IWC-2500-7(a)	R-A R1.20	59.8%
LCS-2-N10	N10 CRD Return Nozzle to Shell	IWB-2500-7	B-D B3.90	71.9%
LCS-2-N1A	N1 Recirc Outlet Nozzle to Shell	IWB-2500-7	B-D B3.90	71.6%
LCS-2-N1B	N1 Recirc Outlet Nozzle to Shell	IWB-2500-7	B-D B3.90	71.6%
LCS-2-N2C	N2 Recirc Inlet Nozzle to Shell	IWB-2500-7	B-D B3.90	70.5%
LCS-2-N3A	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.3%
LCS-2-N3B	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	83.3%
LCS-2-N3C	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	74.1%
LCS-2-N3D	N3 Main Steam Nozzle to Shell	IWB-2500-7	B-D B3.90	74.1%
LCS-2-N6A	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	71.2%
LCS-2-N6C	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	71.2%
LCS-2-N6B	N6 LPCI Nozzle to Shell	IWB-2500-7	B-D B3.90	59.8%
IRR-2001-03	16" Ring Header-to-Sweep-O-Let Weld	IWB-2500-8(c) IWB-2500-9, 10, & 11	R-A R1.20	86.0%
IRR-2001-04	16" Ring Header-to-Sweep-O-Let Weld	IWB-2500-8(c) IWB-2500-9, 10, & 11	R-A R1.20	85.3%

3.2 ASME Code, Applicable Edition and Addenda

For the third 10-year ISI interval at LaSalle, Units 1 and 2, the Code of Record for the inspection of ASME Code Class 1, 2, and 3 components is ASME Code, Section XI, 2001 Edition through the 2003 Addenda.

3.3 Applicable Code Requirements

The RR addresses the following examination requirements from the ASME Code through 2003 Addenda.

Examination Category	ASME Code Table	Examination Method	Coverage
B-A	IWB-2500-1	Volumetric	Essentially 100% of all welds
B-D	IWB-2500-1 as modified by ASME Code Case N-702	Volumetric	Essentially 100% of all welds
Examination Category	**ASME Code Table**	**Examination Method**	**Coverage**
C-C	IWC-2500-1	Surface	Essentially 100% of the length of the attachment weld at each attachment for pressure vessel and pumps
R-A	ASME Section XI as modified by ASME Code Case N-578-1	Volumetric	Essentially 100% of the length of the Risk Informed Inservice Inspection (RI-ISI) weld

3.4 Reason for Request

Relief is requested by LaSalle on the basis that conformance with these code requirements is impractical since conformance would require extensive structural modifications to the component or surrounding structure. The licensee stated that it is unable to satisfy the ASME Code, Section XI, requirements to perform to the extent required for welds and welded attachments (greater than 90 percent of the volume or area) a surface or volumetric examination due to the physical component configuration, interference from permanent plant equipment, single-sided access, etc. The licensee stated that it would incur significant engineering, material, and installation costs to perform such modifications without a compensating increase in the level of quality and safety.

The licensee also stated that from the RI-ISI weld population, for welds in Examination Category R-A, a case by case review was performed to determine whether additional or alternative welds could have been examined to supplement the reduced volumetric coverage examination. The licensee stated it evaluated a comparison of configurations, delta core damage frequency (CDF) values, the systems involved, and inspection history and determined that there were no other welds to select that would have resulted in better coverage.

3.5 Proposed Alternative and Basis for Use

The licensee stated that it has performed the ASME Code, Section XI, required examinations to the maximum extent practical (code coverage), or best effort. Due to the physical interferences causing these limitations, LaSalle stated that there are no alternative examination techniques currently available to increase coverage.

3.6 Duration of Proposed Alternative

The RR is applicable to the LaSalle, Units 1 and 2, third ISI interval which began on October 1, 2007, and concluded on September 30, 2017.

3.7 NRC Staff Technical Evaluation

Pursuant to 10 CFR Part 50.55a(g)(5)(iii), the licensee submitted this request for relief from the examination requirements of the ASME Code, Section XI. The NRC staff evaluation of the licensee's request for relief focused on: (1) whether the ASME Code requirement is impractical, (2) whether the imposition of the ASME Code required inspections would result in a burden to the licensee, and (3) whether the licensee's examination coverage provides reasonable assurance of structural integrity and leak tightness of the subject welds.

Examination Category B-A and B-D

As previously stated, ASME Code, Section XI, Table IWB-2500-1, Category B-A, requires volumetric examination of essentially 100 percent of the weld length and Category B-D requires volumetric examination of all nozzle-to-vessel welds. The licensee is requesting relief from these requirements due to obstruction due to the nozzle configuration, except for two components. The N1 Recirc Outlet Nozzle to Shell weld (LCS-1-N1A) in Unit 1 examination was limited due to a thermocouple located at the weld toe. The SC3 Long Seam @ 20° Az (LCS-1-BG) in Unit 1 examination was limited from the outer diameter surface due to the N12-A nozzle. The licensee stated that the ultrasonic testing (UT) examinations revealed no indications in the inspected volume of these Category B-A welds.

The NRC staff reviewed the licensee's detailed drawings of the location of the welds and applicable obstructions showing the areas for which examination access is limited. The NRC staff concludes that the weld volume identified by the licensee is inaccessible, and therefore, it is impractical for the licensee to comply with the specified requirement. The licensee stated that it was not possible to remove the obstructions without significant work, increased radiation, and/or damage to the plant. The NRC staff determined that this would be a burden on the licensee if the specified requirement was imposed. Furthermore, the licensee included measurements and calculations that were used to determine the stated examination coverages. The NRC staff finds that the UT procedure and techniques were qualified to requirements of the performance demonstration initiative (PDI) program, in accordance with ASME Code, Section XI, Appendix VIII, 2001 Edition through the 2003 Addenda. The NRC staff also verified that the licensee achieved the maximum coverage practical without burdensome and extensive alterations based on its evaluation of the licensee's schematics and calculations.

Based on the above discussion, the NRC staff determined that obtaining the ASME Code required examination volume is impractical. Significant modification would be needed for ASME Code compliance which imposes a burden upon the licensee. Given the coverage obtained and the operational experience for these components, the NRC staff has determined that despite the limitations in coverage, the UT examinations performed provide reasonable assurance of the leak tightness and structural integrity of the welds.

Examination Category R-A and C-C

The NRC staff reviewed the licensee's detailed drawings of the location of the piping welds under the RI-ISI R-A and C-C categories and applicable obstructions showing the areas for which examination access is limited. The licensee stated that these welds were inspected in accordance with the ASME Code, Section XI, Code Case N-578-1, "Risk-Informed Requirements for Class 1, 2 or 3 Piping, Method B."

The NRC staff reviewed the licensee's detailed drawings of the location of the welds and applicable obstructions showing the areas for which examination access is limited. The NRC staff concludes that the weld volume identified by the licensee is inaccessible, and therefore, it is impractical for the licensee to comply with the specified requirement. The licensee stated that it was not possible to remove the obstructions without significant work, increased radiation, and/or damage to the plant. The NRC staff determined that this would be a burden on the licensee if the specified requirement was imposed. Furthermore, the licensee included measurements and calculations that were used to determine the stated examination coverages. The NRC staff finds that the UT procedure and techniques were qualified to requirements of the PDI program, in accordance with ASME Code, Section XI, Appendix VIII, 2001 Edition through the 2003 Addenda. The NRC staff also verified that the licensee achieved the maximum coverage practical without burdensome and extensive alterations based on its evaluation of the licensee's schematics and calculations.

Based on the above discussion, the NRC staff determined that obtaining the ASME Code required examination volume is impractical. Significant modification would be needed for ASME Code compliance which imposes a burden upon the licensee.

For the R-A welds, Table 1 of the ASME Code Case N-578-1, Footnote 3, states: "Includes 100% of the examination location. When the required examination volume or area cannot be examined due to interference by another component or part geometry, limited examinations shall be evaluated for acceptability. Acceptance of limited examinations or volumes shall not invalidate the results of the risk-informed evaluation. Areas of acceptable limited examinations, and their bases shall be documented." By a letter dated April 2, 2019 (ADAMS Accession No. ML19092A239), the licensee included the maximum possible inspection coverage that was obtained for the components R-A welds and the basis for their acceptance.

For the weld IMS-2044-13 (Main Steam), Pipe to Valve weld: This is a carbon steel weld and to date there is no active aging degradation. This weld was originally examined in 1996 and the UT method was not qualified to ASME XI, Appendix VIII, requirements, because it was not required at that time. Since the coverage limitations were not included in the examination report, it was assumed that 100 percent coverage was obtained for this weld and no indications were identified. During 2011, after performing the weld crown reduction, the licensee reexamined this weld and obtained 100 percent coverage and no indications were identified.

The licensee stated that no recordable indications were identified in this weld. In addition, periodic system pressure tests and visual testing (VT)-2 examinations will continue to be performed in accordance with ASME Code, Section XI, Examination Category B-P, for Class 1 pressure retaining welds and items during each refueling outage. In the absence of any leakage during the routine pressure tests, the NRC staff determined that there is a reasonable assurance that the subject weld will maintain its functionality during the service. Based on the above evaluation, the staff concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the main steam weld IMS-2044-13.

Regarding IRR-2001-03 and IRR-2001-04 (Recirculation Piping), Header to Sweep-O-Let, weld, these are stainless steel and are susceptible to intergranular stress corrosion cracking (IGSCC). Previous examinations during the fall 1996 outage of these welds used a technique that was not qualified in accordance with the requirements of ASME Code,

Section XI, Appendix VIII. The licensee stated that 100 percent weld examination coverage may not be achieved with UT examinations that were qualified under the ASME Code provisions. Hence, the licensee could not claim 100 percent weld examination coverage for these welds.

Based on the licensee's response, the NRC staff noted that the area of examination coverage for these welds was over 85 percent and no reportable indications were observed. In addition to these examinations, other stainless-steel welds that are susceptible to IGSCC are inspected under an augmented inspection program in accordance with BWRVIP-75-A, "BWR Vessel Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules." The inspection techniques used in these examinations include liquid penetrant testing, magnetic particle testing, and UT. The NRC staff finds that implementation of inspection frequencies addressed in the BWRVIP-75-A for these welds provides reasonable assurance that any cracking due to IGSCC can be identified in a timely manner.

Additionally, if any cracking in the weld were to be detected, implementation of the sample expansion program as addressed in BWRVIP-75-A, provides information on the extent of condition. Therefore, the NRC staff has concluded that the licensee's corrective action, trending, and monitoring programs provide reasonable assurance that if any emerging aging degradation were to be detected, the corrective actions would be expected to resolve the issue in a timely manner. Based on the volumetric coverage obtained, and satisfactory inspection results during the third 10-year ISI interval, considering enhanced UT capabilities on ferritic welds, it is reasonable to conclude that, if a significant service-induced degradation were to occur, evidence of it would have been detected by the examination that was performed during the third 10-year ISI interval.

The licensee also stated that periodic system pressure tests and VT-2 examinations will continue to be performed in accordance with ASME Code, Section XI, Examination Category B-P, for Class 1 pressure retaining welds and items during each refueling outage.

Additionally, in the letter dated April 2, 2019, the licensee stated that only 16 percent of examination coverage was obtained for weld HP-PU2-04 due to physical configuration. The NRC staff reviewed Figures 1 and 2 provided in the licensee's response and concluded that the limited access to the weld joint makes the examination impractical. However, the NRC staff noted that previous operating experience indicates that there is no active aging degradation mechanism in carbon steel welds. Furthermore, the staff noted that since these welds are periodically inspected on a sampling basis during each interval if a significant service-induced degradation were to occur, evidence of it would have been detected by the examination that was performed during the third 10-year ISI interval.

Based on the above evaluation, the NRC staff concluded that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject carbon steel attachment weld.

4.0 CONCLUSION

As set forth above, the NRC staff determines that it is impractical for the licensee to comply with the requirements of ASME Code, Section XI. The licensee has demonstrated that the proposed alternative provides reasonable assurance of structural integrity or leak tightness of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). The NRC staff determines that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, the NRC staff grants RR No. I3R-15 at LaSalle, Units 1 and 2, for the third ISI interval which began on October 1, 2007, and ended on September 30, 2017.

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

Principal Contributors: Mark Yoo, NRR
Ganesh Cheruvenki, NRR

Date of issuance: May 20, 2019

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – RELIEF REQUEST I3R-15, RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND PRESSURE VESSEL (B&PV) CODE, SECTION XI, "RULES FOR INSERVICE INSPECTION OF NUCLEAR POWER PLANT COMPONENTS" ASSOCIATED WITH THE THIRD TEN-YEAR INSERVICE INSPECTION (ISI) INTERVAL (EPID-L-2018-LLR-0123) DATED MAY 20, 2019

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ADAMS Accession No.: ML19121A317 (*) by e-mail or memo

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