

November 5, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 - RELIEF REQUESTS CR-36
AND CR-37 (TAC NOS. MB1743 AND MB1744)

Dear Mr. Kingsley:

By letter dated April 13, 2001, Exelon Generation Company (Exelon), LLC, submitted a request for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, requirements for the LaSalle County Station, Units 1 and 2. The relief request CR-36 proposes changes to the annual ultrasonic training provisions of Subarticle VII-4240, "Annual Training." The relief request CR-37 proposes changes to the statistical parameters of Subparagraph 3.2(c) of Appendix VIII, Supplement 4 of the ASME Code.

The U.S. Nuclear Regulatory Commission (NRC) staff has evaluated CR-36 and CR-37, and finds that the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety for the LaSalle County Station, Units 1 and 2. The proposed alternatives are only being authorized for the remainder of the second 10-year ISI interval for LaSalle County Station, Units 1 and 2. A relief request for the third 10-year ISI interval, if necessary, should be submitted separately at a later date. Our safety evaluation is enclosed.

Sincerely,

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure: As stated

cc w/encl: See next page

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LaSalle County Station
Units 1 and 2

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LaSalle County Station
Units 1 and 2

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The U.S. Nuclear Regulatory Commission (NRC) staff has evaluated CR-36 and CR-37, and finds that the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety for the LaSalle County Station, Units 1 and 2. The proposed alternatives are only being authorized for the remainder of the second 10-year ISI interval for LaSalle County Station, Units 1 and 2. A relief request for the third 10-year ISI interval, if necessary, should be submitted separately at a later date. Our safety evaluation is enclosed.

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Docket Nos. 50-373 and 50-374

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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION REQUIREMENTS

RELIEF REQUESTS CR-36 AND CR-37

LASALLE COUNTY STATION, UNITS 1 AND 2

EXELON GENERATION COMPANY, LLC

DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

The Inservice Inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by 10 CFR 50.55a(g), except where specific relief has been granted by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will 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. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The inservice inspection code of record for LaSalle County Station, Units 1 and 2, second 10-year ISI interval is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

By letter dated April 13, 2001, the Exelon Generation Company, LLC (licensee), requested relief from the annual ultrasonic training provisions of Appendix VII and the statistical parameter requirements under Subparagraph 3.2(c) of Appendix VIII, Supplement 4 of the ASME Code.

2.0 RELIEF REQUEST CR-36, ANNUAL TRAINING, APPENDIX VII REQUIREMENTS

2.1 Code Requirements for which Relief is Requested (as stated)

10 CFR 50.55a(b)(2) incorporates by reference, the 1995 Edition and Addenda through 1996 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for use in preparing Inservice Inspection programs. Subarticle VII-4240, "Annual Training," of Section XI of [the] ASME Code, 1995 Edition with the 1996 Addenda, Appendix VII, requires a minimum of 10 hours annual training.

10 CFR 50.55a(b)(2)(xiv), "Appendix VIII personnel qualification," requires that all personnel qualified to perform ultrasonic examinations in accordance with Section XI of the ASME Code, Appendix VIII, shall receive 8 hours of annual hands-on training on specimens that contain cracks. This training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.

Relief is requested from the training provisions of Subarticle VII-4240 of Section XI of ASME Code, 1995 Edition with the 1996 Addenda, Appendix VII.

2.2 Licensee's Proposed Alternative to Code (as stated)

Annual ultrasonic training shall be conducted in accordance with 10 CFR 50.55a(b)(2)(xiv) in lieu of Subarticle VII-4240 of Section XI of ASME Code, 1995 Edition with the 1996 Addenda, Appendix VII. The annual ultrasonic training shall require that all personnel qualified for performing ultrasonic examinations in accordance with Section XI of the ASME Code, Appendix VIII, shall receive 8 hours of annual hands-on training on specimens that contain cracks. This training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.

2.3 Licensee's Basis for Relief (as stated)

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from the training provision of Subarticle VII-4240 of Section XI of ASME Code, 1995 Edition with the 1996 Addenda, Appendix VII, that requires a minimum of 10 hours annual training. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

On September 22, 1999, the NRC published a final rule in the Federal Register (64 FR 51370) to amend 10 CFR 50.55a(b)(2), to incorporate by reference the 1995 Edition and addenda through the 1996 Addenda, of Section XI of ASME Code. The change included the requirement to have a minimum of 10 hours of annual training contained in Subarticle VII-4240 of Section XI of ASME Code.

Additionally, the September 22, 1999 Federal Register notice amended 10 CFR 50.55a(b)(2)(xiv). The amended 10 CFR 50.55a(b)(2)(xiv) requires that all personnel qualified to perform ultrasonic examinations in accordance with Appendix VIII of the ASME Code shall receive 8 hours of annual hands-on training on specimens that

contain cracks. This training must be taken no earlier than 6 months prior to performing examinations at a licensee's facility. Paragraph 2.4.1.1.1 in the Federal Register notice contained the following statement which includes a discussion of the Electric Power Research Institute (EPRI) Performance Demonstration Initiative (PDI) program.

The NRC had determined that this requirement (i.e., Subarticle VII-4240) was inadequate for two reasons. The first reason was that the training does not require laboratory work and examination of flawed specimens. Signals can be difficult to interpret and, as detailed in the regulatory analysis for this rulemaking, experience and studies indicate that the examiner must practice on a frequent basis to maintain the capability for proper interpretation. The second reason is related to the length of training and its frequency. Studies have shown that an examiner's capability begins to diminish within approximately 6 months if skills are not maintained. Thus, the NRC had determined that 10 hours of annual training is not sufficient practice to maintain skills, and that an examiner must practice on a more frequent basis to maintain proper skill level. The PDI program has adopted a requirement for 8 hours of training, but it is required to be hands-on practice. In addition, the training must be taken no earlier than 6 months prior to performing examinations at a licensee's facility. PDI believes that 8 hours will be acceptable relative to an examiner's abilities in this highly specialized skill area because personnel can gain knowledge of new developments, material failure modes, and other pertinent technical topics through other means. Thus, the NRC has decided to adopt in the Final Rule the PDI position on this matter. These changes are reflected in 10 CFR 50.55a(b)(2)(xiv) of the final rule.

Implementation of the training requirements contained in Subarticle VII-4240 of Section XI of ASME Code, 1995 Edition with the 1996 Addenda, Appendix VII and 10 CFR 50.55a(b)(2)(xiv) will result in redundant training programs. The approval of this Relief Request, to qualify our personnel to perform ultrasonic examinations in accordance with 10 CFR 50.55a(b)(2)(xiv), will simplify record keeping, satisfy the need to maintain skills, and provide an acceptable level of quality and safety.

2.4 CR-36 Evaluation

Subarticle VII-4240, Appendix VII of Section XI of the Code requires 10 hours of annual training to impart knowledge of new developments, material failure modes, and any pertinent technical topics as determined by the license. No hands-on training or practice is required to be included in the 10 hours of training. This training is required of all UT personnel qualified to perform examinations of ASME Code Class 1, 2, and 3 systems. Independent of the ASME Code, 10 CFR 50.55a(b)(2)(xiv) imposes the requirement that eight hours of hands-on training with specimens containing cracks be performed no earlier than six months prior to performing examinations at a licensee's facility. The licensee contends that its proposed alternative will simplify record keeping and satisfy the need to maintain skills.

As part of the NRC staff's 1999 rulemaking effort to revise 10 CFR 50.55a(b)(2), the issue of UT annual training requirements was reviewed. This review was included in the summary of comments to the September 22, 1999, rule (64 *FR* 51370). In the review, the staff determined

that the 10 hours of annual training was inadequate for two reasons. The first reason was that the training does not require practice with flawed specimens. The 1999 rule requires practice with flaws necessary because signals can be difficult to interpret. The second reason is related to the length of training and its frequency. Studies have shown that an examiner's capability begins to diminish within six months if skills are not maintained. Therefore, the 1999 rule requires examiners to practice on a frequent basis to maintain their capability for proper interpretation of flaws.

Based on resolution of public comments for the above rulemaking, the staff accepted an industry approach advanced by the Electric Power Research Institute (EPRI), which proposed eight hours of hands-on practice with flawed specimens containing cracks. The practice would occur no earlier than 6 months prior to performing examinations at a licensee's facility. This approach was reflected in 10 CFR 50.55a(b)(2)(xiv) in the September 22, 1999, rulemaking for personnel maintaining their Appendix VIII qualifications. Therefore, the staff has determined that the proposed alternative to use 10 CFR 50.55a(b)(2)(xiv) in lieu of Subarticle VII-4240 will maintain the skill and proficiency of UT personnel at or above the level provided in the Code for annual UT training, thereby providing an acceptable level of quality and safety.

2.5 CR-36 Conclusion

The licensee has proposed that the requested relief be granted for the remainder of the second ISI interval, which ends October 11, 2003, for Unit 1 and July 4, 2004, for Unit 2, and for the following third 10-year ISI interval. The licensee's requested relief is consistent with the 1995 Edition and 1996 Addenda of the ASME Code requirements which are currently incorporated by reference in 10 CFR 50.55a. This would result in the requested relief becoming unnecessary for the third 10-year interval when that Code Edition and Addenda (or later) are required to be used. Therefore, it is premature to request relief now for the third 10-year ISI interval.

Based on the discussion above, the staff concludes that the alternative proposed in relief request CR-36 for the second 10-year ISI interval at LaSalle County Station, Units 1 and 2, provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative under relief request CR-36 is only being authorized for the remainder of the second 10-year ISI interval for Units 1 and 2.

3.0 RELIEF REQUEST CR-37, APPENDIX VIII QUALIFICATION REQUIREMENTS

3.1 Code Requirements for which Relief is Requested (as stated)

10 CFR 50.55a(b)(2) incorporates by reference, the 1995 Edition and Addenda through 1996 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for use in preparing Inservice Inspection programs.

Subparagraph 3.2.(c) of Section XI of the ASME Code, Appendix VIII, Supplement 4, requires that the ultrasonic testing (UT) performance demonstration results be plotted on a two dimensional plot with the measured depth plotted along the ordinate axis and the true depth plotted along the abscissa axis. For qualification, the plot must satisfy the statistical parameters identified in Subparagraph 3.2(c).

Relief is requested from the statistical parameters identified (under) Subparagraph 3.2(c) of Section XI of the ASME Code, Appendix VIII, Supplement 4.

3.2 Licensee's Proposed Alternative to Code (as stated)

The RMS calculations of Subparagraph 3.2(a) of Section XI of the ASME Code, Appendix VIII, Supplement 4, which utilize an RMS value of 0.15 and the RMS calculations of Subparagraph 3.2(b), which utilizes an RMS value of 0.75 shall be used in lieu of the statistical parameters of Subparagraph 3.2(c) of Section XI of the ASME Code, Appendix VIII, Supplement 4.

3.3 Licensee's Basis for Relief (as stated)

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from the statistical parameters identified in Subparagraph 3.2(c) of Section XI of the ASME Code, Appendix VIII, Supplement 4. The basis of the relief requests is that the proposed alternatives would provide an acceptable level of quality and safety.

On September 22, 1999, the NRC published a final rule in the Federal Register (64 FR 51370) to amend 10 CFR 50.55a(b)(2) to incorporate by reference the 1995 Edition and addenda through the 1996 Addenda, of Section XI of ASME Code. The change included the provisions of Subparagraph 3.2(a), 3.2(b) and 3.2(c) of Section XI of the ASME Code, 1995 Edition with the 1996 Addenda, Appendix VIII, Supplement 4.

Additionally, the September 22, 1999, Federal Register amended 10 CFR 50.55a(b)(2)(xv)(C)(1). The amended 10 CFR 50.55a(b)(2)(xv)(C)(1), requires a depth sizing acceptance criterion of 0.15 inch Root Mean Square (RMS) to be used in lieu of the requirements of Subparagraph 3.2(a) and 3.2(b) of Section XI of the ASME Code, Appendix VIII, Supplement 4.

On March 26, 2001, the NRC published a correction to the September 22, 1999, final rule in the Federal Register (66 FR 16390). The NRC identified that an error had occurred in the published wording of 10 CFR 50.55a(b)(2)(xv)(C)(1). The corrected 10 CFR 50.55a(b)(2)(xv)(C)(1), requires a depth sizing acceptance criterion of 0.15 inch Root Mean Square (RMS) to be used in lieu of the requirements of Subparagraph 3.2(a) and a length sizing requirement of 0.75 inch RMS to be used in lieu of the requirements 3.2(b) of Section XI of the ASME Code, Appendix VIII, Supplement 4.

The statistical parameters to be used in flaw sizing specified in Subparagraph 3.2(c) of Section XI of ASME Code, 1995 Edition with the 1996 Addenda, Appendix VIII, Supplement 4, rely upon the depth sizing acceptance criteria used in Subparagraph 3.2(a) and length sizing acceptance criteria used in Subparagraph 3.2(b). For Supplement 4 UT performance demonstrations, the linear regression line of the data required by Subparagraph 3.2(c) is not applicable because the performance demonstrations are performed on test specimens with flaws located on the inner 15% through-wall. Additionally, the Subparagraph 3.2(c) specified value for evaluating the mean deviation of flaw depth is too lax for evaluating flaw depths within the inner 15% of wall thickness. We propose to use the 10 CFR 50.55a(b)(2)(xv)(C)(1) RMS calculations of Subparagraph 3.2(a), which utilizes an RMS value of 0.15 inch from, and RMS

calculations of Subparagraph 3.2(b) which utilizes an RMS value of 0.75 inch, in lieu of the statistical parameters of 3.2(c).

3.4 CR-37 Evaluation

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety. The licensee proposes eliminating the use of Appendix VIII, Supplement 4, Subparagraph 3.2(c), which imposes three statistical parameters for depth sizing in lieu of Supplement 4, Subparagraph 3.2(b).

The first parameter, 3.2(c)(1), pertains to the slope of a linear regression line. The linear regression line is the difference between actual versus true value plotted along a through-wall thickness. For Supplement 4 performance demonstrations, a linear regression line of the data is not applicable because the performance demonstrations are performed on test specimens with flaws located in the inner 15 percent through-wall. The differences between actual versus true value produce a tight grouping of results which resemble a shotgun pattern. The slope of a regression line from such data is extremely sensitive to small variations, thus, making the parameter of Subparagraph 3.2(c)(1) a poor and inappropriate acceptance criterion.

The second parameter, 3.2(c)(2), pertains to the mean deviation of flaw depth. The value used in the code is too lax with respect to evaluating flaw depths within the inner 15 percent of wall thickness. Therefore, the licensee proposed to use the more appropriate criterion of 0.15 inch RMS of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies Subparagraph 3.2(a), as the acceptance criterion. The third parameter, 3.2(c)(3) is inappropriate for this application since it is based on the linear regression from Subparagraph 3.2(c)(1).

PDI was aware of the inappropriateness of Subparagraph 3.2(c) early in the development of their program. PDI brought the issue before the appropriate ASME committee which formalized eliminating the use of Supplement 4, Subparagraph 3.2(c) in Code Case N-622. NRC staff representatives participated in the discussions and consensus process of the code case. Based on the above, the NRC staff believes that the use of the Subparagraph 3.2(c) requirements in this context is inappropriate and that the proposed alternative to use the RMS value of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies the criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c) will provide an acceptable level of quality and safety.

3.5 CR-37 Conclusion

The licensee has proposed that the requested relief be granted for the remainder of the second ISI interval, which ends October 11, 2003, for Unit 1 and July 4, 2004, for Unit 2, and for the following third 10-year ISI interval. The licensee's requested relief is consistent with the 1995 Edition and 1996 Addenda of the ASME Code requirements which are currently incorporated by reference in 10 CFR 50.55a. This would result in the requested relief becoming unnecessary for the third 10-year interval when that Code Edition and Addenda (or later) are required to be used. Therefore, it is premature to request relief now for the third 10-year ISI interval.

Based on the discussion above, the staff concludes that the alternative proposed in relief request CR-37 for the second 10-year ISI interval at LaSalle County Station, Units 1 and 2, provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR

50.55a(a)(3)(i), the proposed alternative under relief request CR-36 is authorized for the remainder of the second 10-year ISI interval for Units 1 and 2.

4.0 CONCLUSION

Based on the above evaluations, the staff has determined that, pursuant to 10 CFR 50.55a (a)(3)(i), the proposed alternatives are authorized for the remainder of the second 10-year ISI interval for LaSalle County Station, Units 1 and 2, on the basis that the proposed alternatives provide an acceptable level of quality and safety.

Principal Contributor: T. Steingass

Date: November 5, 2001