

January 15, 2008

Mr. Charles G. Pardee
Chief Nuclear Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – RELIEF REQUEST I3R-05
ASSOCIATED WITH SECOND CONTAINMENT INSERVICE INSPECTION
(CISI) INTERVAL (TAC NOS. MD5467 AND MD5468)

Dear Mr. Pardee:

By letter dated April 30, 2007, as supplemented by letter dated October 11, 2007, Exelon Generation Company, LLC (the licensee), submitted Relief Request (RR) I3R-05 for LaSalle County Station, Units 1 and 2 (LSCS). The licensee requested relief from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a concerning a requirement in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the ASME Code), Section XI, Subsection IWL-2421. The licensee has proposed an alternative to the code requirements with regard to inservice inspection requirements of the post-tensioning system at LSCS, Units 1 and 2, for its second CISI interval.

The Nuclear Regulatory Commission (NRC) has reviewed the licensee's analysis in support of its request for relief. On the basis that the alternative provides an acceptable level of quality and safety, the NRC staff has concluded that the licensee's proposed alternative to the requirements of IWL-2421 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the LSCS, Units 1 and 2, for the Second 10-year interval of the primary containment inservice inspection program.

Sincerely,

/RA/

Russell Gibbs, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure:
Safety Evaluation

cc w/encls: See Next page

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***SE dated 12/10/07**

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LaSalle County Station, Units 1 and 2

cc:

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELIEF REQUEST I3R-05 FOR POST-TENSIONING SYSTEM INSPECTION SCHEDULING
REQUIREMENTS FOR SITES WITH TWO PLANTS
LASALLE COUNTY STATION, UNITS 1 AND 2
DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By letter dated April 30, 2007, Agencywide Document Access and Management System (ADAMS) Accession No. ML071280395 (Ref. 4.1), Exelon Generation Company, LLC (EGC), the licensee of LaSalle County Station (LSCS), Units 1 and 2, requested relief I3R-05 to use an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWL-2421 that is incorporated by reference in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 55a for the second Containment Inservice Inspection (CISI) program interval.

This evaluation addresses Relief Request I3R-05 as an alternative to the code requirements pursuant to 10 CFR 50.55a(a)(3)(i).

2.0 REGULATORY REQUIREMENT

The regulation in 10 CFR 50.55a(3)(i) states that proposed alternatives to the requirements of paragraphs (c), (d), (e), (f), (g) and (h) of the section (i.e., 10 CFR 50.55a "Code and Standards") or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation provided the applicant demonstrates that the proposed alternatives would provide an acceptable level of quality and safety. By this relief request, pursuant to 10 CFR 50.55a(3)(i), EGC has proposed an alternative to the code requirements in 10 CFR 50.55a(g)(4) with regard to inservice inspection requirements of the post-tensioning system at LSCS, Units 1 and 2, for its second CISI interval. The licensee has requested authorization of the relief on the basis that the proposed alternative provides an acceptable level of quality and safety.

3.0 TECHNICAL EVALUATION

3.1 Relief Request IR3-05

The licensee is requesting relief pursuant to 10 CFR 50.55a(a)(3)(i), from the post-tensioning system inspection scheduling requirements in IWL 2421 for sites with two plants, on the basis that the proposed alternative will provide an acceptable level of quality and safety.

3.1.1 ASME Code Components Affected:

Code Class: CC
Subsection: IWL-2421
Examination Category: L-B
Item Number: L2.10, L2.20
Description: Inservice Inspection Scheduling Requirements for Sites
with Two Plants
Component Number: Tendons and Wire Strands for Class CC Concrete Containmentment

3.1.2 Applicable Code Edition and Addenda:

ASME Boiler and Pressure Vessel Code, Section XI, 2001 Edition through 2003
Addenda

3.1.3 Applicable Code Requirement From Which Relief is Requested:

Subsection IWL-2421 (a) of the ASME Section XI Code states that the test schedule for the unbonded post-tensioning tendon systems of concrete containments for sites with two plants may be modified, as specified in Subparagraph IWL-2421(b) of the ASME Section XI Code, if the following conditions are met.

- (i) Both primary containments utilize the same pre-stressing system and are essentially identical in design;
- (ii) Post-tensioning operations for the two primary containments were completed not more than 2 years apart; and
- (iii) Both containments are similarly exposed to or protected from the outside environment.

The licensee has requested relief from the second condition in the IWL-2421(a) requirement, described above, that allows the modified test schedule of IWL-2421(b) to be applied only if post-tensioning operations for the two primary containments were completed not more than 2 years apart. This relief would allow the continued treatment of LSCS, Units 1 and 2, primary containment as twin containments for the purpose of tendon surveillance.

3.1.4 Licensee's Reason and Basis for Request:

LSCS, Units 1 and 2, primary containments utilize the same prestressing system, are essentially identical in design, and both primary containments are similarly exposed to or protected from the outside environment. This meets two of the three conditions in IWL-2421(a) for the two containments to be treated as twin containments for the purpose of tendon surveillance. However, since the post-tensioning operations for LSCS, were performed approximately 29 months apart (i.e., more than 2 years), the licensee has requested relief from the second condition in the IWL-2421(a) requirement that allows the modified test schedule of IWL-2421(b) to be applied only if post-tensioning

operations for the two primary containments were completed not more than 2 years apart. This would allow the continued treatment of LSCS, Units 1 and 2, primary containment as twin containments.

The licensee stated that prior to the endorsement of the IWL rules in 10 CFR 50.55a, by letter dated June 3, 1994, the NRC in Amendment No. 100 for Unit 1 and Amendment No. 84 for Unit 2 approved the use of guidance in Regulatory Guide 1.35, "Inservice Inspection of UngROUTed Tendons in Prestressed Concrete Containments," Revision 3, and Surveillance Requirement 3.01 for its tendon surveillance program and allowed the treatment of LSCS, Units 1 and 2, primary containment as twin containments. The licensee is currently completing its first 10-year interval of its CISI program based on the 1998 edition of the ASME Code, Section XI, Subsection IWL. The licensee stated that its current IWL program for tendons and wires/strands is based on the continued treatment of the LSC primary containments as twin containments. Post-tensioning system inspections completed to date have been performed for the 1st, 3rd, 5th, 10th, 15th, 20th and 25th years for Unit 1, and 1st, 3rd, 5th, 10th, 15th, and 20th years for Unit 2, with the tendon and wire/strand tests being completed every other 5 year period. These post-tensioning system tests and examinations for both units have all met the applicable acceptance criteria. The licensee stated that results of the inspections completed to date demonstrate that the performance of the Unit 2 post-tensioning system relative to the Unit 1 post-tensioning system (i.e., 29 months apart) is not a factor contributing to any unique condition that may subject either primary containment to a different potential for structural or tendon deterioration. The NRC previously approved an identical relief request, CR-32, for the first 10-year CISI interval at LSCS in its safety evaluation report dated August 16, 2001 (Ref. 5.3), and the licensee is using the same approach in this request.

3.1.5 Proposed Alternative and Duration:

The modified test schedule of IWL-2421(b) will continue to be used for LSCS, Units 1 and 2, tendon tests (L2.10) and wire/strand examinations (L2.20). The initiation of the IWL-2400 rolling 5 year schedule was based on the previous inspection dates under the Station Tendon Surveillance Program prior to Subsection IWL being endorsed and will continue throughout the requested relief interval.

The relief is requested for the Second Ten-year IWL interval (10/01/2007 – 9/30/2017) of the CISI Program for LSCS, Units 1 and 2.

3.1.6 Staff Evaluation:

The licensee was previously granted an identical relief (Relief Request CR-32), based on the 1998 Edition of the ASME Section XI Code, for the first CISI Interval at LSCS, Units 1 and 2, per NRC Safety Evaluation Report dated August 16, 2001 (Ref. 4.3). The code of record at LSCS for the second CISI interval is the 2001 edition (2003 Addenda) of ASME Section XI. The requirements in Subsection 2421 of the two editions are identical and, therefore, do not impact the tendon surveillance program in the second CISI interval.

However, the staff noted that several LSCS Unit 1 containment tendons were found severely degraded during an inservice inspection in 2003, when the two containments were being treated as twin containments for tendon surveillance based on relief request CR-32. Therefore, in a request for additional information (RAI), the staff asked the licensee to discuss its program for substantiating the structural integrity of one unit when severely degraded tendon conditions are found during tendon surveillance of the other unit, for surveillances scheduled based on IWL-2421(b) for sites with multiple plants. The staff also requested the licensee how it addressed this issue when the degraded conditions were identified for Unit 1 tendons in 2003, that ensured an acceptable level of quality and safety of the post-tensioning systems of both units at LSCS.

In its response dated October 11, 2007 (Ref. 4.2), the licensee stated that inspections and testing of the post-tensioning tendon systems at LSCS are conducted in accordance with an EGC procedure "Inservice Inspection and Testing of the Pre-Stressed Concrete Containment Post Tensioning Systems." This procedure requires that, in the event that any acceptance standard is not met, the applicability of the condition to the other unit at the same site be evaluated. In addition, the licensee stated that its Corrective Action Program (CAP) requires an unacceptable condition identified during an inspection be documented in an Issue Report. The stated procedure and the CAP process ensure the structural integrity of one unit is evaluated when severely degraded tendon conditions are found during tendon surveillance of the other unit, for surveillances scheduled based on ASME Code Section XI, Subsection IWL-2421(b) "Sites with Multiple Plants."

The licensee stated that LSCS Unit 1, 25th year (2003) post-tensioned tendon surveillance performed required physical testing and visual examinations. The LSCS Unit 2, 20th year (2003) post-tensioned tendon surveillance required visual examinations. The LSCS Unit 1 surveillance first identified 7 of the 90 wires failed for a vertical tendon. This failure was entered into the licensee's CAP. Based on this failure, the scope of inspection was expanded to determine extent of the degraded conditions for LSCS, Units 1 and 2. A detailed operability evaluation was performed as part of the corrective action process in accordance with licensee procedures. The conclusions of the operability evaluation supported continued operation of both Units. As a result of the expanded inspection scope, several additional vertical tendons in both Units 1 and 2 were identified that did not meet the acceptance criteria of the stated EGC procedure and ASME Section XI IWL requirements. A root cause evaluation was performed that determined that the failure of the tendon wires was attributed to water induced corrosion caused by failure of the intrusion barriers and aided by the loss of corrosion protection medium (i.e., grease) in the top region of a particular type of vertical tendons. Corrective actions were completed to prevent recurrence which included replacement of degraded tendons in both Units 1 and 2, and the installation of a revised floor plate and upper grease cap design for all accessible vertical tendons of the degraded type to prevent water intrusion. As required by the 1998 edition of ASME Section XI, an ASME Engineering Evaluation Report that addressed the above was completed. This evaluation resulted in extensive visual inspections and physical tests of all accessible vertical tendons in both units that were inspected in 2003, for extent of the condition. Subsequent augmented inspections were also required and have been completed for both Units in 2004, and 2006, and are still in progress. The remaining augmented inspections and tests will be completed in 2007.

Based on the above response, the NRC staff finds that the licensee has a sound procedure and a rational approach in place to address the integrity issues of tendons of one unit when degraded tendon conditions are found during surveillance of the other. When degraded tendon conditions were found in 2003, the licensee appropriately determined the extent of the condition in both units, determined the root cause, took appropriate corrective actions, performed operability evaluation, and implemented augmented examinations to further monitor the tendons of both units. The NRC staff finds that the licensee implemented the stated procedure effectively when degraded tendon conditions were found in 2003, in a manner that ensured an acceptable level of quality and safety of the post-tensioning systems of both units. The licensee's response is acceptable since it addressed the NRC staff's concern.

Based on the above discussion, the NRC staff finds that the alternative proposed by the licensee in this relief request (I3-R05) provides an acceptable level of quality and safety with regard to surveillance requirements of the post-tensioning systems of LSCS, Units 1 and 2, for the second CISI interval.

4.0 REFERENCES

- 4.1 Letter No. RA07-036 dated April 30, 2007, from Susan R. Landhal, Exelon Nuclear – LaSalle County Station to USNRC with regard to Submittal of Relief Requests Associated with the Third Inservice Inspection (ISI) Interval and the Second Containment Inservice Inspection Interval (CISI), LaSalle County Station, Units 1 and 2, Facility Operating License No. NPF-11 and NPF-18, Docket Nos. 50-373 and 50-374, (ML071280395).
- 4.2 Letter No. RS-07-130 dated October 11, 2007, from Patrick R. Simpson, Exelon Nuclear to USNRC with regard to Response to Request for Additional Information Related to Relief Request I3R-05, "Post-Tensioning Inspection Scheduling Requirement For Sites With Two Plants," LaSalle County Station, Units 1 and 2, Facility Operating License No. NPF-11 and NPF-18, Docket Nos. 50-373 and 50-374, (ML072850710).
- 4.3 Letter dated August 16, 2001, from Anthony J. Mendiola (USNRC) to Oliver D. Kingsley (Exelon Nuclear) regarding LaSalle County Station, Units 1 and 2 – Safety Evaluation.

5.0 CONCLUSION

On the basis that the alternative provides an acceptable level of quality and safety, the NRC staff concludes that the licensee's proposed alternative to the requirements of IWL-2421 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the LSCS, Units 1 and 2, for the Second 10-year interval of the primary containment inservice inspection program.

Principal Contributor: G. Thomas, NRR

Date: January 15, 2008