

May 28, 2008

Mr. Charles G. Pardee  
Chief Nuclear Officer  
and Senior Vice President  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – RELIEF REQUEST FOR  
I3R-11 FOR THE THIRD TEN-YEAR INSERVICE INSPECTION INTERVAL  
(TAC NOS. MD5469 AND MD5470)

Dear Mr. Pardee:

By letter to the Nuclear Regulatory Commission (NRC), dated April 30, 2007, as supplemented by letters dated July 20, 2007, and March 6, 2008, Exelon Generation Company LLC (the licensee), submitted inservice inspection (ISI) Relief Request (RR) I3R-11, Revision 1, for NRC approval at LaSalle County Station (LSCS), Units 1 and 2. Specifically, the licensee proposed an alternative to certain requirements in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code for the system leakage test of the unit cross-tie piping of the hydrogen recombiner system for the third 10-year inspection interval for LSCS.

The NRC staff has completed its review of RR 13R-11 and is providing the attached safety evaluation (SE). The additional RRs contained in the licensee's April 30, 2007, letter are not evaluated in the attached SE and are addressed, separately. Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55(a)(3)(ii), the licensee's proposed alternative is acceptable on the basis that complying with the specified requirements results in hardship without a compensating increase in the level of quality and safety.

The LSCS third 10-year ISI interval started on October 1, 2007. The RR is authorized for the third 10-year interval, which will end September 30, 2017.

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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Docket Nos. 50-373, 50-374  
Enclosure: Safety Evaluation  
cc w/encls: See Next page

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## **LaSalle County Station, Units 1 and 2**

**cc:**

Corporate Distribution  
Exelon Generation Company, LLC  
Via e-mail

LaSalle Distribution  
Exelon Generation Company, LLC  
Via e-mail

LaSalle Resident Inspector  
U.S. Nuclear Regulatory Commission  
Via e-mail

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Chairman  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION RELIEF REQUEST I3R-11, REVISION 1

THIRD TEN-YEAR 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 to the Nuclear Regulatory Commission (NRC, the Commission), dated April 30, 2007 (Agencywide Documents Management System (ADAMS), Accession No. ML071280395), as supplemented by letters dated July 20, 2007, and March 6, 2008 (ADAMS Accession Nos. ML072080475 and ML080670036, respectively), Exelon Generation Company LLC (the licensee), submitted in-service inspection (ISI) Relief Request (RR) I3R-11, Revision 1, for NRC approval at LaSalle County Station, Units 1 and 2 (LSCS). Specifically, the licensee proposed an alternative to certain requirements in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for the system leakage test of the unit cross-tie piping of the hydrogen recombiner system for the third 10-year inspection interval for LSCS.

Relief is requested for the third 10-year ISI interval for LSCS, which began on October 1, 2007 and concludes on September 30, 2017.

2.0 REGULATORY EVALUATION

As specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), ISI of nuclear power plant components shall be performed in accordance with the requirements of ASME Code, Section XI, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). As stated in 10 CFR 50.55a(g)(5)(iii), if the licensee has determined that conformance with certain ASME Code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in 10 CFR 50.4, information to support the determinations. Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (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

The information provided by the licensee in support of its RR has been evaluated by the NRC staff, and the bases for disposition are documented below.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Components for Which Relief is Requested:

- Code Class: 2
- Reference: IWC-2500, Table IWC-2500-1
- Examination Category: C-H
- Item Number: C7.10
- Description: Hydrogen Recombiner System Piping
- Component Number: HG Unit Cross-Tie Piping
  - From check valve 1HG007 to check valve 2HG016
  - From check valve 1HG016 to check valve 2HG007
  - From check valve 1HG009 to check valve 2HG006B
  - From check valve 1HG006B to check valve 2HG009

#### 3.2. Applicable ASME Code Edition and Addenda

The ISI program is based on the ASME Code, Section XI, 2001 Edition through the 2003 Addenda.

#### 3.3 Applicable ASME Code Requirements

Table IWC-2500-1, Examination Category C-H, Item Number C7.10, requires all Class 2 pressure retaining components be subject to a system leakage test with a VT-2 visual examination in accordance with IWC-5220. This pressure test is to be conducted once each inspection period.

IWC-5210(b)(2) requires the test procedure to include methods for detection and location of through-wall leakage from the components of the system tested when the pressurizing medium is gas.

#### 3.4 Reason for Request

Relief is requested from the system pressure test requirements of IWC-5221 and the periodicity requirements of Table IWC-2500-1, as well as the requirements of IWC-5210(b)(2) as applied to the cross-tie piping of the hydrogen recombiner system, as depicted on page 4 in Figure I3R-11.1 of the licensee's July 20, 2007, submittal and as defined in the above component numbers. Air is used as the pressurizing medium for the hydrogen recombiner system because the system contains air during normal operation. The application of a leak detection solution (e.g., soap bubble solution) to the surface of the piping would be necessary per IWC-5210(b)(2) in order to allow for the detection and location of potential through-wall air leakage. To access the surface of the cross-tie piping, scaffolding is required because there are long runs of piping located approximately 30 feet overhead. An estimated 600 person-hours and accumulated dose of 1.25 rem (roentgen equivalent man) would be required to erect scaffolding and perform a leakage test of cross tie piping. Furthermore, a significant amount of scaffolding would have to be erected around several sensitive instrument racks and systems on both units that, if jarred, could result in a unit trip or other challenges to the operators.

Alternatively, LSCS will challenge the unit cross-tie piping to provide assurance of its structural integrity by performing pressure test at peak accident pressure and applying a soap bubble solution to all pipe welds once per Inspection Interval. Necessary scaffolding will be erected and leak detection solution will be applied to the surface of the unit cross-tie piping to the extent required by IWC-5210(b)(2) if through wall leakage is detected during pressure testing of accessible components and associated piping, which is performed once every inspection period, or if through wall leakage is detected during pressure testing unit cross tie piping welds. The condition of the accessible components as determined by pressure testing of the accessible components once every inspection period in accordance with the Section XI rules would be indicative of that of the inaccessible components. Both the accessible and inaccessible components are designed/constructed to the same requirements and are subject to similar operating conditions. Additionally, the hydrogen recombiners, including the unit cross-tie piping, are functionally tested every refuel outage to verify system temperature, pressure, and flow requirements to further ensure system operability and structural integrity.

Based on the above discussion, reasonable assurance of the unit cross-tie piping structural integrity is achieved by the performance of the alternate pressure test of piping welds once every ISI interval.

### 3.5 Proposed Alternative and Basis for Use

A pressure test will be performed on the unit cross-tie piping welds, at peak accident pressure, once each inspection interval.

Necessary scaffolding will be erected and leak detection solution will be applied to the surface of the unit cross-tie piping to the extent required by IWC-5210(b)(2) if:

- Through wall leakage is detected during pressure testing of accessible components and associated piping (once per inspection period.) (Remainder of system for which no relief is requested).

OR

- Through wall leakage is detected during pressure testing of unit cross-tie piping welds (once per inspection period).

### 3.6 Duration of Proposed Alternative

Relief is requested for the third 10-year ISI interval LSCS, which began on October 1, 2007 and concludes on September 30, 2017.

## 4.0 EVALUATION

The licensee requested relief from certain ASME Code requirements in performing the system pressure (leakage) test of the unit cross-tie piping, of the hydrogen recombiner system, at LSCS. In performing the system pressure test, air is used as the pressurizing medium and a soap solution will be applied on the piping surface (pressure boundary) for detection and location of leak. The subject RR consists of two parts, one of which pertains to a limited VT-2

examination of the cross-tie piping as the ASME Code requires that 100 percent of the pressure boundary surface be visually examined (VT-2) to detect and locate potential leakage. The relief from 100 percent VT-2 examination of the piping surface is needed because several hundred feet of cross-tie piping are located 30 feet overhead and are inaccessible for examination. To meet the ASME Code requirements, considerable amount of scaffolding is required to be erected in an area with high radiation level and surrounded by several sensitive instrument racks and systems. Therefore, the NRC staff concludes that the erecting of the scaffolding for performing a leakage examination over the entire cross-tie piping surface would impose undue hardship or unusual difficulties on the licensee.

The second part of the relief pertains to the frequency of the examination required by the ASME Code for this piping. The licensee proposed to perform the pressure test at peak accident pressure once per inspection interval and limit the inspection to all pipe welds with the application of soap solution, rather than performing the system pressure test once per inspection period as required by the ASME Code. The licensee will continue to perform a VT-2 visual examination of the accessible portion of this piping that need no scaffolding during each inspection period in accordance with the ASME Code. In addition, the boundary of the surface examination will be extended to cover the inaccessible portion of this piping as required by IWC-5210(b)(2) if through-wall leakage is detected during the system pressure testing of the accessible and inaccessible components and associated piping.

The NRC staff finds that the licensee's proposed alternative provides reasonable assurance of structural integrity of the unit cross-tie piping. This is based on the following considerations:

- (1) The accessible and inaccessible portions of the piping are made of identical material and size, and are exposed to similar service conditions in terms of stress and temperature. Therefore, the examination of accessible piping would provide a reasonable indication regarding the condition of the inaccessible portion of the piping.
- (2) The welds in a piping system are considered to be the weakest links in the piping system. Therefore, leakage at weld locations is more likely to occur than leakage in the piping base material. Hence, examinations of the piping welds after the system pressure test would provide reasonable assurance of the leak-tight integrity of the entire cross-tie piping.
- (3) The pressure in the referenced piping system during most of the plant life is very low. Furthermore, the piping contains ambient air and the potential for developing any environmentally-assisted cracking is expected to be negligible. Therefore, any gross rupture of the piping due to large undetected cracks is highly unlikely.
- (4) The proposed system pressure test for this piping is going to be performed at the peak accident pressure (39.9 psig) which is more conservative than that required by the ASME Code (atmosphere pressure). Therefore, the results of the proposed system pressure test will provide reasonable assurance in demonstrating the structural integrity of the piping.

## 5.0 CONCLUSION

Based on the above review, the NRC staff concludes that the licensee's RR I3R-11 is acceptable. This is based on the consideration that requiring the licensee to perform a Code-required examination would impose an undue hardship or unusual difficulty on the licensee without a compensating increase in the level of quality and safety. In addition, the licensee's proposed alternative as discussed above will provide reasonable assurance in the maintenance of the structural integrity of the unit cross-tie piping. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes the use of the proposed alternative for the third 10-year ISI interval of LSCS. All other ASME Code, Section XI, requirements for which relief was not specifically requested and authorized herein by the NRC staff remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: W. Koo, NRR

Date: May 28, 2008