

October 6, 2000

Mr. Oliver D. Kingsley, President
Nuclear Generation Group
Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: LASALLE COUNTY STATION - REQUEST FOR RELIEF FROM ASME CODE,
SECTION XI (TAC NOS. MA8728 AND MA8729)

Dear Mr. Kingsley:

By letter dated August 11, 2000, as supplemented on August 30, 2000, Commonwealth Edison Company (ComEd) submitted a request for relief from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, 1989 Edition, for the second 10-year inservice inspection interval pursuant to 10 CFR 50.55a(a)(3)(ii) for LaSalle County Station, Units 1 and 2. ComEd requests relief from the system pressure test requirement of the Code concerning the frequency and leak detection of the unit cross-tie piping of the Hydrogen Recombiner System. The licensee's alternative would allow it to detect through-wall leakage in welds of the cross-tie piping during a system pressure test that is to be conducted once during the inspection interval, as opposed to the Code-required frequency of conducting this test once in every inspection period.

The staff finds that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The staff also finds that ComEd's proposed alternative provides reasonable assurance of structural integrity of the unit cross-tie piping. Therefore, ComEd's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year inspection interval. The enclosed safety evaluation contains the basis for this determination.

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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Docket Nos. 50-373 and 50-374

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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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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION

RELIEF REQUEST NO. PR-12, REVISION 1 ON ASME CODE, SECTION XI

COMMONWEALTH EDISON COMPANY

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By letter dated August 11, 2000, as supplemented on August 30, 2000, Commonwealth Edison Company (ComEd) submitted a request for relief from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, 1989 Edition, for the second 10-year inservice inspection interval pursuant to 10 CFR 50.55a(a)(3)(ii) for LaSalle County Station, Units 1 and 2. ComEd requests relief from the system pressure test requirement of the Code concerning the frequency and leak detection of the unit cross-tie piping of the Hydrogen Recombiner System. The licensee's alternative would allow both units of LaSalle to detect through-wall leakage in welds of the cross-tie piping during system pressure test to be conducted once during the inspection interval, as opposed to the Code-required frequency of conducting this test once in every inspection period.

10 CFR 50.55a(g) requires that the inservice inspection of the ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Code and applicable addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that 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.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall 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) 12 months prior to the start of the 120-month interval, subject to

the limitations and modifications listed therein. The applicable ASME Code, Section XI, for the second 10-year inservice inspection (ISI) interval for LaSalle County Station, Units 1 and 2, is the 1989 Edition.

The staff has evaluated the licensee's request for relief pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year inservice inspection interval of LaSalle, Units 1 and 2.

2.0 DISCUSSION

2.1 Identification of Components

Hydrogen Recombiner System Unit Cross-Tie Piping
From Valve 1HG002B to Valve 2HG002A
From Valve 1HG002A to Valve 2HG002B
From Valve 1HG009 to Valve 2HG006B
From Valve 1HG006B to Valve 2HG009 (as shown in Figure PR-12.1
of Relief Request PR-12, Revision 1)

2.2 Code Requirements

ASME Code, Section XI, 1989 Edition, Table IWC-2500-1, Examination Category C-H, Item Numbers C7.30, C7.40, C7.70 and C7.80 require system pressure tests in accordance with IWC-5221 or IWC-5222, as well as a VT-2 visual examination to be performed during the system pressure tests in each inspection period. Subsection IWC-5210(b) requires that pressure test procedures include methods to detect and locate through-wall leakage when air is used as the pressurizing medium.

2.3 Relief Requested

Relief is requested from the VT-2 visual examination requirement of the entire cross-tie piping where the system pressure test is conducted using air as the pressurizing medium with application of a leak detection solution (e.g., soap bubble solution) to the surface of the piping for detection and location of leakage. Also, relief is requested from conducting the above system pressure test of inaccessible portions of the piping to the Code-required frequency of once every inspection period (40 months) during the second 10-year inspection interval.

2.4 Licensee's Proposed Alternative (as stated)

"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) if:

- Through-wall leakage is detected during pressure testing of accessible components and associated piping (remainder of system for which no relief is requested), or
- Through-wall leakage is detected during pressure testing of unit cross-tie piping welds.”

2.5 Licensee’s Basis for Relief (as stated)

“Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative would provide an acceptable level of quality and safety.

Relief is requested from the system pressure test requirements of IWC-5221 and IWC-5222 and the periodicity requirements of Table IWC-2500-1, as well as the requirements of IWC-5210(b) as applied to the cross-tie piping of the Hydrogen Recombiner System, as depicted on page 3 in Figure PR-12.1, and defined in 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) 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 will be required because there are long runs of piping located approximately 30 feet overhead. An estimated 600 man hours and accumulated dose of 1.25 Rem 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, LaSalle County Station 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) 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 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 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 insure system operability and 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 inspection interval.”

3.0 EVALUATION

The licensee's request for relief consists of two parts, one of which pertains to a limited VT-2 examination of the cross-tie piping of the Hydrogen Recombiner System during system pressure test when air is used as the pressurizing medium with an application of soap solution on the pressure boundary for detection and location of leak. The Code requires that the piping be pressure tested using air as the pressurizing medium since the subject piping would contain gaseous products when the system is called upon for use. However, the Code also requires that 100 percent of the pressure boundary surface be VT-2 visually examined to detect and locate potential leakage. This requirement would, therefore, require application of soap solution on hundreds of feet of piping. The licensee states that a considerable length of the subject piping is inaccessible, located 30 feet overhead and requires considerable amount of scaffolding for access to the Code examination boundary. The licensee also states that significant radiation exposure would be incurred by those erecting the scaffolding. The staff concurs that erecting scaffolding and performing a leakage test over the entire surface may be an extensive effort associated with high radiation exposure consequence.

The second part of the relief pertains to the frequency of examination required by the Code for this piping. The licensee proposed to provide assurance of piping structural integrity by performing a pressure test at peak accident pressure and applying a soap bubble solution to all pipe welds once per inspection interval, rather than performing a system pressure test once per inspection period as the Code requires. In addition, the licensee currently performs a VT-2 visual examination of accessible portions of this piping that need no scaffolding during each inspection period in accordance with the Code, and proposes that should they detect any through-wall leakage during the test of the accessible portion, the examination boundary of the test would be extended to cover the inaccessible portion of this piping. Furthermore, a system pressure test of welds in the unit cross-tie piping will be performed at peak accident pressure during the inspection interval to meet the 10-year hydrostatic test requirement of the Code.

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

- The accessible and inaccessible portions of piping are of identical material and size, and would likely be subjected to an equal magnitude of stress. Therefore, examination of accessible piping would provide a suitable means for monitoring the condition of the inaccessible portion as well.
- Examination of welds in the piping during the 10-year system pressure test of the current inspection interval would provide reasonable assurance of leak-tight integrity of the entire cross-tie piping since welds are considered to be the weakest link in the piping and, therefore, leakage at welds is more likely to occur than leakage in piping base material.
- The service pressure for this piping is very low and it does not experience its service pressure and temperature during most of plant life except during functional tests. Since the piping contains ambient air, the potential for developing any environmentally

assisted cracks in this piping is also negligible. Therefore, any gross rupture of the piping due to large undetected cracks is highly unlikely.

4.0 CONCLUSION

The staff concludes that due to the conditions under which the code-required VT-2 visual examination of the subject piping would have to be performed, performance of the code-required examination would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The staff also concludes that the licensee's proposed alternative provides reasonable assurance of structural integrity of the unit cross-tie piping. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the second 10-year inservice inspection interval of LaSalle County Station, Units 1 and 2.

Principal Contributor: P. Patnaik

Dated: October 6, 2000