

June 28, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 - RELIEF REQUESTS PR-08
AND PR-10 (TAC NOS. MB3780 AND MB3781)

Dear Mr. Skolds:

By letter dated December 21, 2001, Exelon Generation Company, LLC, submitted a request for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1989 Edition, Table IWC-2500-1, examination requirements. The Relief Request PR-08 by LaSalle County Station, Units 1 and 2, proposes as an alternative to the existing ASME Code to credit the continuous pressure decay monitoring for the nitrogen side of the Control Rod Drive accumulators and associated piping. The Relief Request PR-10 proposes as an alternative to the existing ASME Code to substitute the pressure decay testing on the Automatic Depressurization System accumulators.

The NRC staff has evaluated Relief Requests PR-08 and PR-10, and finds that the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that they provide 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 inservice inspection (ISI) interval for LaSalle County Station, Units 1 and 2. Relief requests 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, 50-374

Enclosure: Safety Evaluation

cc w/encl: See next page

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The NRC staff has evaluated Relief Requests PR-08 and PR-10, and finds that the proposed alternatives may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that they provide 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 inservice inspection (ISI) interval for LaSalle County Station, Units 1 and 2. Relief requests 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, 50-374
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LaSalle County Station Units 1 and 2

- 2 -

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION REQUIREMENTS

RELIEF REQUESTS PR-08 AND PR-10

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) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME *Boiler and Pressure Vessel Code* and applicable addenda as required by 10 CFR 50.55a(g), 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 in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the applicant 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) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the 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 the second 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) on the date twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the LaSalle County Station, Units 1 and 2, during the second 10-year inservice inspection (ISI) interval is the 1989 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

In a letter dated December 21, 2001, Exelon Generation Company (EGC), LLC, the licensee for LaSalle County Station, Units 1 and 2, requested approval of Relief Requests PR-08, "Alternate Pressure Testing of the Control Rod Drive (CRD) System Accumulators," and PR-10, "Alternate Pressure Testing of the Safety Relief Valve (SRV) Automatic Depressurization System (ADS) Accumulators," for the second 10-year ISI interval of LaSalle Units 1 and 2.

The staff has evaluated the licensee's requests for relief from the 1989 Edition, ASME Code, Section XI, pursuant to 10 CFR 50. 55a(a)3(i).

2.0 DISCUSSION (RELIEF REQUEST PR-08)

Component Identification:

Code Class:	2
References:	Table IWC-2500-1
Examination Category:	C-H
Item Number:	C7.10, C7.20, C7.30, C7.40, C7.70, and C7.80
Description:	Alternate Pressure Testing of the Control Rod Drive (CRD) System Accumulators
Component Numbers:	CRD Accumulators and associated piping

Code Requirement:

ASME Section XI, paragraph IWC-2500, states that components shall be examined and pressure tested as specified in Table IWC-2500-1. Table IWC-2500-1 requires that a VT-2 visual examination be performed during system pressure test.

Code Requirement from which Relief is Requested:

Relief is requested from the performance of system pressure tests and VT-2 visual examination requirements specified in Table IWC-2500-1 for the nitrogen side of the CRD system accumulators and associated piping.

Licensee's Basis for Relief: (as stated)

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

LaSalle County Station, Units 1 and 2, Technical Specification (TS) Surveillance Requirement (SR) 3.1.5.1 requires each control rod scram accumulator pressure to be equal to or greater than 940 psig for the control rod scram accumulator to be considered operable. The SR is required to be met whenever the unit is operating in Modes 1 and 2. The accumulator pressure is continuously monitored by system instrumentation and a surveillance is performed on a weekly basis that requires a physical walkdown of all CRD accumulators. The walkdown is intended to identify any system air leaks and negative trending in system pressure. The accumulators are isolated from the source of make up nitrogen, thus the continuous monitoring of the CRD accumulators currently functions as a pressure decay type test. The accumulators are maintained at a pressure of approximately 1100 psig during operation. Should accumulator pressure fall below 1000 psig (-15 psig), an alarm is received in the control room. The pressure drop for the associated accumulator is then recorded in the control room log, and the accumulator is recharged by station procedure LOP-RD-20, "Control Rod Accumulator Recharging/Water Removal." Other corrective actions, including soap bubble application to locate leakage or equipment repair are performed, as required, in accordance with the Corrective Action Program.

Since the monitoring of the nitrogen side of the accumulator at pressures consistent with the requirements of Table IWC-2500-1 is continuous, any degradation of the accumulator and associated piping would be detected by normal system instrumentation. The accumulators are normally passive components and are accessible to slow developing failure modes. Corrosion and tubing connection integrity are the primary modes of failure. Continuous monitoring will detect degrading conditions of individual accumulators due to these failure modes before similar detection by the code required examination. The continuous monitoring of the CRD accumulators and associated piping exceeds the code requirement of inspecting the system once per inspection period. The additional VT-2 visual examination performed once per inspection period would not provide an increase in safety, system reliability, or structural integrity. In addition, performance of a VT-2 visual would require applying a leak detection solution to 185 accumulators per unit in an elevated dose rate area. This results in radiation exposure (estimated 150-400 mrem) without any added benefit in the level of quality and safety. This inspection would not be consistent with As Low As Reasonably Achievable (ALARA) practices.

Relief is requested from the performance of system pressure tests and VT-2 visual examination requirements specified in Table IWC-2500-1 for the nitrogen side of the CRD system accumulators and associated piping on the basis that the requirements of SR 3.1.5.1 exceeds the code required examinations.

Licensee's Proposed Alternate Examinations: (as stated)

As an alternate to the visual VT-2 examination requirements of Table IWC-2500-1, LaSalle County Station will perform continuous pressure decay monitoring for the nitrogen side of the CRD Accumulators and associated piping and a weekly surveillance in accordance with Technical Specification Surveillance Requirements, SR 3.1.5.1 that requires a physical walkdown of all CRD accumulators.

2.1 EVALUATION

The 1989 ASME Code, Section XI, requires a system leakage test of all pressure retaining components of CRD System Accumulators and the associated piping once every 40 months and a VT-2 visual examination is required to be conducted to detect evidence of leakage from the pressure retaining components. The Code further states that the contained fluid in the system shall serve as the pressurizing medium. As an alternative to the VT-2 visual examination requirements of the Code, the licensee proposes to take credit for the TS surveillance performed in accordance with section SR 3.1.5.1 which states that each control rod scram accumulators shall be determined operable at least once per 7 days by verifying that the indicated pressure is greater than or equal to 940 psig unless the control rod is fully inserted and disarmed, or scrambled. In addition to the surveillance requirement, the accumulator pressure is continuously monitored and annunciated in the control room if the pressure drop is 15 psig from 1000 psig. This pressure drop is documented in the control room log and the accumulator is recharged to a set pressure. After recharging, a leak detection is performed by applying soap solution to most likely areas of nitrogen leakage to ensure that no leaks are present. Subsequently, the performance of the charged accumulator is monitored to ensure that there is no leakage. The differences in leak detection technique for these two cases are that the VT-2 visual examination requires application of a leak detection solution to each of the

(185) accumulators and observing for bubbles versus leak detection by continuous monitoring of pressure decay with alarm in the control room followed by corrective action if required. The staff believes that the latter technique is as reliable as the former in leak detection capability and, therefore, it provides an acceptable level of quality and safety.

2.2 CONCLUSION

The staff concludes that the licensee's proposed alternative of continuous pressure decay monitoring in conjunction with the TS surveillance performed per section SR 3.1.5.1 for Control Rod Scram Accumulators in lieu of the Code-required VT-2 visual examination during each inspection period, provides an acceptable level of quality and safety.

The licensee has proposed that the requested relief be granted for the remainder of the second ISI interval, which is projected to end on October 11, 2003, for Unit 1, and July 4, 2004, for Unit 2. 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 may 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, the proposed alternative is only being authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the second 10-year ISI interval for LaSalle County Station, Units 1 and 2.

3.0 DISCUSSION (RELIEF REQUEST PR-10)

Component Identification:

Code Class:	2
References:	Table IWC-2500-1
Examination Category:	C-H
Item Number:	C7.10, C7.20, C7.30, C7.40, C7.70, and C7.80
Description:	Alternate Pressure Testing of the Safety Relief Valve (SRV) Automatic Depressurization System (ADS) Accumulators
Component Numbers:	SRV ADS Accumulators and associated piping

Code Requirement:

ASME Section XI, paragraph IWC-2500, states that components shall be examined and pressure tested as specified in Table IWC-2500-1. Table IWC-2500-1 requires that a VT-2 visual examination be performed during system pressure test.

Code Requirement from which Relief is Requested:

Relief is requested from the performance of system pressure tests and VT-2 visual examination requirements specified in Table IWC-2500-1 for the SRV ADS accumulators and associated piping.

Licensee's Basis for Relief: (as stated)

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

LaSalle County Station technical surveillances LTS-500-18 "Unit 1 Main Steam Safety Relief Valve Operability" and LTS-500-19 "Unit 2 Main Steam Safety Relief Valve Operability" perform operability testing of the main steam safety relief valves including the seven relief valves and accumulators per unit that are required to provide automatic depressurization. These surveillances are performed on a refueling outage frequency as a requirement of LaSalle County Station's Inservice Testing (IST) program. One specific test that these surveillances perform is a pressure decay test of the ADS accumulators, associated piping and valves. The pressure decay test is performed by isolating and pressurizing the ADS accumulators and associated piping to the nominal operating pressure (i.e., 100 pounds per square inch, gauge). The decay in pressure is then monitored through calibrated pressure measuring instrumentation. If the acceptable pressure decay criteria (5 pounds per square inch gauge decay within 2 hours) are exceeded, the surveillances identify appropriate troubleshooting steps to perform, including soap-bubble application to locate leakage. The pressure decay test performed as part of LTS-500-18 and LTS-500-19 will identify any degradation of the ADS accumulators and associated piping. The volume tested by these surveillances encompasses the entire ASME Section XI code boundary. These surveillances are performed on a greater frequency than the required period frequency of Table IWC-2500-1 and the test pressure is consistent with the pressure requirements of Table IWC-2500-1. Thus, the testing performed during these surveillances will provide the same level of quality and safety as the pressure testing and the VT-2 visual examination requirements of Table IWC-2500-1. The additional VT-2 visual examination performed once per inspection period would not provide an increase in safety, system reliability, or structural integrity. In addition, performance of a VT-2 visual examination would require applying a leak detection solution to seven accumulators per unit and associated piping in an elevated dose rate area with limited access. This results in radiation exposure (estimated 200-400 mrem) without any added benefit in the level of quality and safety. This inspection would not be consistent with As Low As Reasonably Achievable (ALARA) practices.

Relief is requested from the performance of system pressure tests and the VT-2 visual examination requirements specified in Table IWC-2500-1 for the SRV ADS Accumulators and associated piping on the basis that the existing LaSalle County Station surveillances provide an acceptable level of quality and safety.

Licensee's Proposed Alternate Examinations: (as stated)

As an alternate to the examination requirements of Table IWC-2500-1, LaSalle County Station will perform pressure decay testing on the ADS Accumulators and associated piping every refueling outage in accordance with surveillance procedures LTS-500-18 for Unit 1 and LTS-500-19 for Unit 2.

3.1 EVALUATION

The automatic depressurization system utilizes selected safety/relief valves for depressurization of the reactor. Each of the safety/relief valves utilized for automatic depressurization is equipped with an air accumulator and check valve arrangement. The accumulators assure that the valves can be held open following failure of the air supply to the accumulators.

The 1989 ASME Code, Section XI, requires a system leakage test of all pressure retaining components of the Automatic Depressurization System and Safety Relief Valve Accumulators including their associated piping once every 40 months and a VT-2 visual examination is required to be conducted to detect evidence of leakage from the pressure retaining components. The Code further states that the contained fluid in the system shall serve as the pressurizing medium. As an alternative to the VT-2 visual examination requirements of the Code, the licensee proposes to take credit for the Technical Specifications surveillance performed in accordance with sections SR 3.5.1.7 and SR 3.5.1.8 which states that each ADS SRV shall be determined operable automatically and manually on a 24-month frequency. In addition, the TS Section 5.5.7 requires that these valves are to be surveillance tested in accordance with the IST program during each refueling outage. The licensee's surveillance is governed by procedures LTS-500-18, "Unit 1 Main Steam Safety Relief Valve Operability," and LTS-500-19, "Unit 2 Main Steam Safety Valve Operability," each of which verifies proper operation of the SRV pneumatic supply system, actuator, solenoids, and if necessary, the proper valve stroke distance. This procedure requires performance of a pressure decay test by isolating and pressurizing the ADS and SRV accumulators including their associated piping to the nominal operating pressure of 100 psig and monitoring the pressure decay to ensure leak-tight integrity of the components.

The decay in pressure of 5 psig within 2 hours is an acceptable limit beyond which the pressure boundary is subjected to investigation for location of any leakage. The staff considers this leakage criterion based on pressure decay to be an acceptable alternative to the Code-required VT-2 visual examination of the pressure boundary. Even the ASME Code, Section XI, allows rate of pressure loss as an alternative to the VT-2 visual examination during system leakage test of buried components that are isolable by means of valves. Nevertheless, assuming that the pressure decay provides an adequate assurance of a leak-tight integrity of the components during the surveillance, the proposed alternative offers further conservatism as reflected in the frequency of surveillance being once every 24 months as opposed to the Code-required VT-2 visual examination frequency of once every 40 months. The staff, believes that it is redundant to conduct a VT-2 visual examination in accordance with Table IWC-2500-1 of the ASME Code, Section XI, over and above the surveillance required under Technical Specifications Sections 3.5.1.7 and 3.5.1.8 and the inservice tests to ensure leak-tight integrity of the pressure boundary of the ADS SRV accumulators and their associated piping. Therefore, the staff finds that the licensee's proposed alternative provides an acceptable level of quality and safety.

3.2 CONCLUSION

The staff concludes that the licensee's proposed alternative to perform a pressure decay test for the ADS SRV Accumulators and associated piping every refueling outage in accordance with surveillance procedures LTS-500-18 for Unit 1 and LTS-500-19 for Unit 2, and compliance with TS Sections 3.5.1.7 and 3.5.1.8 and the inservice tests in lieu of the Code-required VT-2 visual examination during each inspection period, provided an acceptable level of quality and safety.

The licensee has proposed that the requested relief be granted for the remainder of the second ISI interval, which is projected to end on October 11, 2003, for Unit 1, and July 4, 2004, for Unit 2. 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 may 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, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) only for the remainder of the second 10-year ISI interval for LaSalle County Station, Units 1 and 2.

Principal Contributor: P. Patnaik

Date: June 28, 2002