



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 20, 2008

Mr. Charles G. Pardee
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 AUDIT PLAN – REQUEST TO IMPLEMENT GANGED CONTROL ROD WITHDRAWAL CAPABILITY OF THE ROD CONTROL MANAGEMENT SYSTEM (TAC NOS. MD6642 AND MD6643)

Dear Mr. Pardee:

By letter to the Nuclear Regulatory Commission (NRC), dated August 14, 2007, Exelon Generation Company, LLC, for the LaSalle County Station (LSCS), submitted a request to revise the LSCS licensing basis, as necessary, to implement the ganged control rod withdrawal capability of the rod control management system. To support NRC's review of this request, the Reactor Systems Branch (SRXB) and the Nuclear Performance and Code Review Branch (SNPB) are reviewing the adequacy of your proposed licensing basis changes with respect to certain postulated reactivity and power distribution anomalies.

The NRC staff has identified the need to conduct an audit at Exelon's Kennett Square location on November 24, 2008. The SRXB and SNPB audit will enable the NRC staff to conduct a timely review of the proposed calculations that will enable the licensing basis to remain consistent with Chapter 15.4 of the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," while accounting for the capability to withdraw gangs of up to 4 control rods simultaneously.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Sands FOR".

Stephen Sands, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure:
Audit Plan

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AUDIT PLAN
REQUEST TO IMPLEMENT GANGED CONTROL ROD WITHDRAWAL CAPABILITY
EXELON GENERATION
LA SALLE COUNTY STATION. UNITS 1 AND 2
FACILITY OPERATING LICENSE NO. NPF-11 AND NPF-18
DOCKET NO. 50-373 AND 50-374

Background

By letter to the Nuclear Regulatory Commission (NRC), dated August 14, 2007, Exelon Generation Company, LLC (EGC, the licensee), for the LaSalle County Station, Units 1 and 2 (LSCS), submitted a request to revise the LSCS licensing basis as necessary to implement the ganged control rod withdrawal capability of the rod control management system (Reference 1). To support NRC's review of this request, the Reactor Systems Branch (SRXB) is reviewing the adequacy of the licensee's proposed licensing basis changes with respect to certain postulated reactivity and power distribution anomalies.

Summary of EGC/NRC Correspondence

The August 14, 2007, licensing basis change request was supplemented by letter dated May 12, 2008 (Reference 2). After its review of the licensing basis change request and the supplemental information, the NRC staff requested additional information (RAI) by letter dated August 1, 2008 (Reference 3), to which the licensee responded by letters dated September 2, 2008 (Reference 4), and September 12, 2008 (Reference 5). Based on an unacceptable response to the NRC staff's RAI, the NRC requested supplemental information from the licensee. This request was forwarded from SRXB to the Division of Operating Reactor Licensing by memorandum, G. Cranston to R. Gibbs, dated October 14, 2008 (Reference 6). The request was forwarded to the licensee by e-mail from S. Sands to J. Schrage, EGC, dated October 14, 2008. The NRC staff clarified the request with the licensee during a teleconference on Tuesday, October 21, 2008, and during a subsequent teleconference on November 5, 2008.

Audit Purpose and Justification

The purpose of the audit is to examine technical information concerning EGC's response to the NRC staff's October 14, 2008, request for supplemental information.

In the October 14, 2008, request, the NRC identified that the proposed licensing basis change does not adequately account for possible common-mode software failures that could result in the inability of the reactivity control system to terminate erroneous withdrawals of gangs of rods. The NRC staff requested, therefore, an update to the proposed licensing basis change to account for erroneous withdrawals of gangs of up to four control rods in both low-power and at-power conditions.

Enclosure

During the subsequent clarifying teleconferences, EGC and the NRC discussed initial condition assumptions and acceptance criteria that should be applied to these postulated events. The NRC and EGC also discussed the fact that the currently approved nuclear physics design and analysis tools that are used to analyze postulated reactivity and power distribution anomalies at LSCS do not account for postulated erroneous withdrawals of more than one control rod.

The NRC and EGC agreed that, not only would the NRC need to review and approve postulated transient analyses, but the NRC would also need to provide a case-specific exception to allow analysis of the postulated transients in a manner that is not described by the currently NRC-approved licensing topical reports that describe the transient analysis methods.

EGC requested additional clarification from the NRC regarding the appropriate analytic assumptions necessary to yield an appropriately conservative and bounding licensing basis analysis that would account for the possible reactivity and power distribution anomalies introduced by the proposed change.

An audit is requested for this clarification for three reasons:

- (1) The analysis methodology, as currently published, is proprietary in its entirety.
- (2) Any modifications to the analysis methodology are expected to be proprietary.
- (3) EGC requests clarification regarding their proposed analytic methodology prior to performing the analysis, which means that an NRC audit is requested prior to the licensee's response to the NRC staff's RAI.

This audit activity is expected to reduce regulatory burden by clarifying the methods and basis of the methods used by EGC, thereby, eliminating the highly likely potential for a third round of RAIs.

Documentation Requirements

The NRC staff will require the licensee to submit, on the docket, any draft RAI responses that are provided to the NRC staff for review during the audit.

The NRC staff will compile a detailed audit report summarizing all documents examined and discussions conducted with the licensee. A non-proprietary summary of the audit report will be made available within 45 days of the audit exit. This report will also be referenced in the NRC staff's safety evaluation.

Regulatory and Technical Basis

The regulatory and technical basis for the NRC staff's audit is contained in Chapter 15.4 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants." Specifically, the NRC staff will rely on the guidance contained in Section 15.4.1, "Uncontrolled Control Rod Assembly Withdrawal from a Subcritical or Low Power Startup Condition," and Section 15.4.2, "Uncontrolled Control Rod Assembly Withdrawal at Power," of the Standard Review Plan.

In consideration of the case-specific exception to the NRC-approved analytical models used to predict the consequences of the erroneous ganged control rod withdrawals, the NRC staff will also use the guidance contained in Section 15.0.2 of the Standard Review Plan, "Review of Transient and Accident Analysis Method."

Audit Agenda

1. Review SRXB/EICB Request for Supplemental Information
2. Clarify EGC's proposed analytical roadmap
 - a. rod sequence assumptions
 - b. core parameters
 - i. State points
 - ii. Reactivity conditions
 - c. analytic methods
 - d. justification for any requested exceptions to NRC-approved methodology
 - e. predicted event sequence progression
 - f. credited operator actions, if any
 - g. mitigating systems
 - h. event sequence termination
 - i. acceptance criteria
 - i. fuel thermal margin
 - ii. cladding thermal margin
3. Clarify required licensing basis documentation
 - a. revisions necessary for current licensing basis
 - b. impact on Technical Specifications and/or Bases
 - c. summary of divergence between current and revised licensing basis
4. Discuss impact requested licensing basis change will have on the cycle-specific reload safety analyses
5. Review preliminary analytic results
6. Exit audit

Audit Team

The audit team will consist of:

- Benjamin Parks, Reactor Systems Branch Technical Reviewer
- Anthony Attard, Nuclear Performance and Code Review Branch Technical Reviewer

The on-site support of the cognizant licensing staff from EGC is requested. In addition, while not requested to be physically present, technical staff, site personnel, and fuels services contractors are expected to provide support via offsite conferencing capability, as necessary.

Assumptions and Understandings

It is understood that Items 2 and 3 of the agenda will be accomplished via a presentation from EGC to the NRC staff.

It is understood that EGC has requested that this audit occur in an amount of time not to exceed 2 hours.

It is understood that, should an extension to the audit time be necessary, EGC staff will remain available until the audit is concluded, for a period of time not to exceed a full business day. It is understood that this audit will be conducted at EGC's Kennett Square, Pennsylvania, office location.

Documents Requested for NRC Staff Examination

In addition to proprietary documentation regarding the proposed analytic approach for analyzing erroneous ganged control rod withdrawals, the NRC staff requests that the following documents be made available for consultation during the audit:

- Documents referenced during the November 5, 2008, teleconference between EGC and the NRC staff, specifically:
 - XN-NF-80-19(P)(A), "Exxon Nuclear Methodology for Boiling Water Reactors."
 - XN-NF-825(P)(A), "BWR/6 Generic Rod Withdrawal Error Analysis, MCPRp," and Maximum Extended Operating Domain Supplement.
 - Applicable licensing documentation for CASMO4/MICROBURN-B2.
- Draft response to NRC's Request for Supplemental Information.
- Applicable LSCS Licensing Basis documentation.
- Any proprietary documents, either presented during the audit, or placed on the docket, will be handled in accordance with the provisions of Title 10 of the *Code of Federal Regulations*, Part 2, Section 2.390.
- LSCS Technical Specifications and Bases.

Special Requests

The NRC staff requests the availability of a semi-private conference room or similarly suitable location to deliver technical presentations and interview staff. The audit location is also requested to have offsite conferencing capability to support interaction with remotely located EGC personnel.

References

1. Benyak, D. M., Exelon Generation Company (EGC), Letter to USNRC, "Request for License Amendment to Allow Ganged Rod Drive Capability of the Rod Control Management System," August 14, 2007.
2. Simpson, P. R., EGC, letter to USNRC, "Supplemental Information Concerning License Amendment to Allow Ganged Rod Drive Capability of the Rod Control Management System," May 12, 2008.
3. S. P. Sands, USNRC, letter to C. G. Pardee, EGC, "La Salle County Station, Units 1 and 2 – Request for Additional Information Related to Request for License Amendment to Allow Ganged Rod Drive Capability of the Rod Control Management System," August 1, 2008.
4. Simpson, P. R., EGC, letter to USNRC, "Supplemental Information Concerning License Amendment to Allow Ganged Rod Drive Capability of the Rod Control

Management System," September 2, 2008.

5. Simpson, P. R., EGC, letter to USNRC, "Supplemental Information Concerning License Amendment to Allow Ganged Rod Drive Capability of the Rod Control Management System," September 12, 2008.
6. Cranston, G. V., USNRC, memorandum to R. Gibbs, USNRC, "Request for Supplemental Information - La Salle County Station Request to Implement Ganged Control Rod Capability of the Rod Control Management System," October 14, 2008.

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Sincerely,

/RA by MDavid for/

Stephen Sands, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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NRR-106

OFFICE	LPL3-2/PM	LPL3-2/LA	DSS/SRXB/BC	DSS/SNPB/BC	LPL3-2/BC
NAME	SSands MDavid for	EWhitt	GCranston	AMendiola	RGibbs
DATE	11/20/08	11/20/08	11/20/08	11/20/08	11/20/08

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