



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

June 5, 2017

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2, REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST FOR EXTENSION OF TYPE A AND TYPE C LEAK RATE TEST FREQUENCIES (CAC NOS. MF8700 AND MF8701)

Dear Mr. Hanson:

By letter dated October 26, 2016, Exelon Generation Company, LLC (EGC) submitted an amendment request for the LaSalle County Station (LSCS), Units 1 and 2. The proposed amendment would revise Technical Specification 5.5.13, "Primary Containment Leakage Rate Testing Program," to allow for the permanent extension of the Type A integrated leak rate testing and Type C leak rate testing frequencies.

The NRC staff reviewed your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During the telephone discussion between the NRC Staff and the licensee on June 5, 2017, for clarification of these requests for additional information (RAIs), it was agreed that the licensee will provide the responses to these RAIs no later than 45 business days from the date of this letter.

The NRC staff considers that timely responses to these RAIs help ensure sufficient time is available for NRC staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

If you have any questions, please call me at 301-415-3308.

Sincerely,

A handwritten signature in black ink that reads "Bhalchandra Vaidya".

Bhalchandra Vaidya, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure: Request for Additional Information

cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION (RAI)
REGARDING LICENSE AMENDMENT REQUEST (LAR) TO REVISE
TECHNICAL SPECIFICATIONS 5.5.13 "PRIMARY CONTAINMENT LEAKAGE
RATE TESTING PROGRAM," FOR PERMANENT EXTENSION OF TYPE A AND
TYPE C TESTING FREQUENCIES
LA SALLE COUNTY STATION (LSCS), UNITS 1 AND 2
(CAC NOS. MF8700 AND MF8701)

PRA RAI-01

As described in Sections A.2.3 and A.2.4 of Appendix A to Attachment 3 of the LAR, the LaSalle County Station (LSCS) internal events and internal flooding Probabilistic Risk Assessment (PRA) underwent a peer review in 2008 against the American Society of Mechanical Engineers (ASME) PRA standard RA-Sa-2002, and the clarifications and qualifications in Revision 1 of Regulatory Guide (RG) 1.200. Consistent with the U.S. Nuclear Regulatory Commission (NRC) safety evaluation report dated June 25, 2008 (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML081140105) for Nuclear Energy Institute 94-01, Revision 2, and Electric Power Research Institute (EPRI) Technical Report 1009325, Revision 2, "[c]apability category I [CC I]...shall be applied as the standard since approximate values of CDF [core damage frequency] and LERF [large early release frequency] and their distribution among release categories are sufficient for use in the EPRI methodology." However, as indicated in Section A.2.3 of the LAR, finding-level Facts and Observations (F&Os) and supporting dispositions, as documented in Table A-1 of the LAR, are only provided for those supporting requirements (SRs) determined by the peer review to be not met. The two finding-level F&Os associated with SRs met at CC I and supporting dispositions are not included.

Additionally, the LSCS internal events and internal flooding PRA used to support the application underwent a self-assessment in 2014 against the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) PRA standard RA-Sa-2009, as clarified/qualified by Revision 2 of RG 1.200. While Section A.2.3 of the LAR appears to indicate that 17 gaps were identified for SRs determined to be not met or met at CC I, only a subset of these gaps and their dispositions appear to have been provided in Table A-2 of the LAR.

Please provide all finding-level F&Os and gaps for SRs determined by the 2008 peer review or the 2014 self-assessment to be at CC I or not met, include associated dispositions and address impact on the application.

PRA RAI 02

As described in Sections A.2.3 and A.2.4 of the LAR, the LSCS internal events and internal flooding PRA last underwent a full-scope peer review in 2008, and, since then the PRA has been at a minimum changed to resolve, at least in part, resulting F&Os and a number of gaps identified during the 2014 self-assessment. While some of these changes are discussed in the

LAR, others, as indicated in PRA RAI 01, are not. The ASME/ANS PRA standard RA-Sa-2009 defines a PRA upgrade as:

“...incorporation into a PRA model of a new methodology or significant changes in scope or capability that impact the significant accident sequences or the significant accident progression.”

- (a) Please provide an overview of all changes, including any new analyses or incorporation of new methodology, performed in the internal events and internal flooding PRA model that have occurred following the 2008 peer review, and justify whether any of these changes fit the definition and criteria of the PRA standard for an upgrade.
- (b) If a focused-scope peer-review is deemed necessary based on the response to item a above, please provide the results of such a review addressing the associated F&Os and their disposition.

PRA RAI 03

Table A-2 of Attachment 3 to the LAR lists three unresolved gaps from the 2014 internal events and internal flooding PRA self-assessment. Gap # 1 identified issues with the screening of flood locations stating that the screening process used individual conditional core damage probabilities (CCDPs), instead of the “bounding” CCDP, which is defined in the PRA standard (SR IFQU-A3) as “the highest of the CCDP values for the flood scenarios in an area.” Therefore, it appears that LSCS internal flooding PRA may screen out more flood sources than recommended by the PRA standard. Gap # 2 identified that surveillance test data were not used in data development for the LSCS internal events PRA. The resolution states that “it is expected that the assumptions used to collect data from the Maintenance Rule and MSPI [Mitigating Systems Performance Index] data sources, yield acceptable data” and review of surveillance test data “will likely result in very few changes and likely negligible changes to failure probabilities.” Gap # 3 indicates that environmental qualification is credited for operability of instrumentation affected by spray effects.

The licensee’s disposition of these gaps states that the overall impact of these finding is minimal but did not provide any supporting justification. Please provide justification, preferably quantitatively (e.g., through sensitivity analyses), that these gaps have no impact on the application.

PRA RAI 04

Sections 3.3.2 and A.2.5 of the LAR indicates that the LSCS fire PRA (FPRA) underwent a peer review in December 2015 against the ASME/ANS PRA standard RA-Sa-2009. However, it is not clear to the NRC staff whether this peer review also considered the clarifications and qualifications of RG 1.200, Revision 2.

Please provide clarification whether the 2015 FPRA peer review addressed these clarifications and qualifications, and if not, provide the results of a self-assessment that does, identifying any gaps and assessing their impact on the application.

PRA RAI 05

Section 5.7.5 of Attachment 3 of the LAR states that the fire CDF estimate used to support the integrated leak rate test (ILRT) application is bounding, and the licensee identifies some general conservatisms associated with the LSCS FPRA in Section 5.7.2 of Attachment 3 to support this conclusion. However, the NRC staff observes that a number of non-conservatisms documented by finding-level F&Os in Table A-4 of the LAR do not appear to have been resolved. Additionally, while the licensee's dispositions in Table A-4 state that the resolution of such F&Os would be inconsequential to the application, no supporting justification is provided. These F&Os include:

- F&O 1-1 regarding the impact of spurious operation of instruments on operator actions;
- F&O 1-9 regarding the treatment of instrumentation and support system dependencies as well as interlock circuits;
- F&Os 1-19, 6-9, 6-11 and 6-14 regarding cable selection;
- F&O 1-20 regarding proper polarity hot shorts on ungrounded DC circuits;
- F&O 1-23 regarding the human reliability dependency analysis;
- F&O 2-8 regarding fire damage to exposed structural steel;
- F&O 3-4 regarding recovery of instrument air;
- F&O 3-6 regarding credit given to recovery of cognition errors;
- F&O 3-11 regarding spurious closure of minimum flow valves;
- F&O 3-13 regarding instrument air logic modeling;
- F&O 4-1 regarding the physical analysis units included within the global analysis boundary;
- F&O 4-17 regarding unavailability of fire detection and suppression systems;
- F&O 4-18 regarding the time to fire detector operation; and
- F&O 6-12 regarding assumed cable routing.

Moreover, the NRC staff observes that the LSCS FPRA, as stated in Section 5.7.1.1 of Attachment 3 of the LAR states, is "an interim implementation of NUREG/CR-6850." For this reason, it is not clear to the NRC staff to what extent the FPRA is consistent with the current state-of-the-art for FPRA (including guidance in NUREG/CR-6850 and all accepted guidance since NUREG/CR-6850 was first issued).

- (a) Please provide justification, preferably quantitatively (e.g., through sensitivity analyses), whether the estimated fire CDF and LERF are bounding, considering non-conservatisms documented by unresolved F&Os and the current state-of-the-art for FPRA (including guidance in NUREG/CR-6850 and all accepted guidance since NUREG/CR-6850 was first issued).
- (b) Please provide clarification whether the FPRA makes use of any "unapproved/unreviewed analysis methods," and if so, assess the impact on the application of replacing such methods with alternative methods that are acceptable to the NRC.

PRA RAI 06

Section 5.7.1.3 of Attachment 3 of the LAR states that external hazards other than fire and seismic (e.g., high winds and tornadoes, external floods, transportation accidents, and nearby facility accidents) were not considered because of their negligible contribution to overall plant

risk. This conclusion was reached based on the LSCS Individual plant examination for external events (IPEEE) analysis performed in 1994 and has not been updated.

Consistent with the RG 1.174 guidance that that the PRA scope, level of detail and technical acceptability be based on the as-built and as-operated and maintained plant, and reflect operating experience at the plant, please provide justification for the applicability of the IPEEE conclusions to the current plant and its environs, considering each of the external hazards screened from this application and taking into account any updated risk studies and insights.

PRA RAI 07

Section 4.2 of Attachment 3 of the LAR indicates that given the absence of “substantive differences” between the LSCS Units 1 and 2 internal events PRA models, only the Unit 2 internal events PRA model was used to support the application. In Section 5.7.1.1 of Attachment 3, the licensee similarly notes that the application only makes use of the Unit 2 FPRA; though, no supporting justification appears to be provided for its use.

Please provide a brief description of the differences between the units, particularly, those differences that might impact fire and internal flooding risk, and assess the impact of any risk-significant differences on the application.

PRA RAI 08

The LAR does not request an extension of the drywell to wetwell bypass leak rate test (DWBT) interval extension. The licensee stated that the current DWBT surveillance interval “is controlled under the LSCS surveillance frequency control program (SFCP) and is expected to be revised under the SFCP to once every 15 years should the LSCS ILRT LAR be approved.” A risk analysis quantifying the risk impact of the DWBT interval extension was provided in Appendix B to Attachment 3 to the LAR.

Since the DWBT interval extension is not requested in the LAR, please provide explanation and clarification for the purpose of this DWBT risk analysis, including the risk impact of the DWBT interval on the ILRT interval extension requested in the LAR.

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