

RS-10-084

April 26, 2010

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: Additional Information Supporting Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program

Reference: Letter from P. R. Simpson (Exelon Generation Company, LLC) to U.S. NRC, "Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (Adoption of TSTF-425, Revision 3)," dated February 15, 2010

In the referenced letter, Exelon Generation Company, LLC (EGC) requested an amendment to Facility Operating License Nos. NPF-11 and NPF-18 for LaSalle County Station (LSCS), Units 1 and 2, respectively. The proposed change modifies the LSCS Technical Specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program. Attachment 2 of the referenced letter provided documentation with regard to probabilistic risk assessment (PRA) technical adequacy. Table A.2-1, "LaSalle PRA 2008 Peer Review Results," included information regarding the gaps that were identified during the peer review of the LSCS PRA.

During a conference call with the NRC on April 15, 2010, the NRC indicated that with respect to Table A.2-1, a more detailed discussion of the identified gaps was needed, rather than the associated supporting requirement descriptions. As a result, EGC is providing a revised version of Table A.2-1 that includes a discussion of the gaps identified during the peer review.

EGC has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachments 6 and 1, respectively, of the referenced letter. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the additional information provided in this submittal does not affect the bases for concluding that neither an environmental impact

statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 26th day of April 2010.

Respectfully,


Patrick R. Simpson
Manager – Licensing

Attachment: Additional Information Supporting Probabilistic Risk Assessment Technical Adequacy

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector – LaSalle County Station
Illinois Emergency Management Agency – Division of Nuclear Safety

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Additional Information Supporting Probabilistic Risk Assessment Technical Adequacy

TABLE A.2-1
LASALLE PRA 2008 PEER REVIEW RESULTS

SUPPORTING REQUIREMENTS	DESCRIPTION OF GAP	PEER REVIEW ASSESSMENT	IMPACT ON BASE PRA
IE-A7	<p>Although a detailed plant-specific precursor review was not reported, industry wide initiating event precursors are considered and documented where appropriate in the LaSalle initiating event (IE) analysis (e.g., loss of station cooling, ISLOCA, loss of multiple DC buses, reference leg break, and the various LOCA categories). Additionally, plant-specific precursors are specifically considered in the plant water intake evaluation provided in Appendix G.1 of the component data notebook.</p> <p>A jump from Category I to Category III could be achieved by supplementing the initiating event identification process with additional documented evidence that plant-specific operating experience precursors were considered (perhaps with reference to operations and/or system manager interviews that considered near misses, or lack of any near misses, at the site).</p>	Supporting Requirement Met Capability Category (CC) I.	Documentation issue. No impact. No additional IE categories would be identified. Peer reviewers desired greater discussion/documentation of IE precursors.
IE-D3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per Electric Power Research Institute (EPRI) guidance. However, the current analysis does not fully meet the requirements of Regulatory Guide (RG) 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this supporting requirement (SR) in the future.</p>	Supporting Requirement Not Met.	Refer to the impact discussion for Supporting Requirement QU-E4.

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SUPPORTING REQUIREMENTS	DESCRIPTION OF GAP	PEER REVIEW ASSESSMENT	IMPACT ON BASE PRA
AS-C3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to the impact discussion for Supporting Requirement QU-E4.
SC-B5	<p>While the LS-PSA-003 notebook provides some selected comparison of RMIEP MELCOR results to more recent MAAP runs, there is no documented comparison of how the LaSalle success criteria compare to those used for sister plants or other similar comparisons as required for this SR. However, the success criteria used for LaSalle appear to be consistent with those of other similar boiling water reactors (BWRs).</p> <p>The LS-PSA-003 documentation should be enhanced to include a section that compares the LaSalle success criteria to those used in the PRAs of other similar BWRs.</p>	Supporting Requirement Not Met.	Documentation issue. No impact. The LaSalle PRA Success Criteria Notebook compares MAAP and MELCOR runs. The peer review team desired more comparisons with other plants and other codes.

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SC-C3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to the impact discussion for Supporting Requirement QU-E4.
SY-A4	<p>System engineer interviews are documented in the respective system notebooks. Operator interviews are documented in the Human Reliability Analysis (HRA) notebook. Each system notebook contains an appendix documenting interviews with system managers, however, there is little mention, if any at all, of walkdowns performed in support of the system analyses. The impression received is that walkdowns were performed some time ago for a much earlier revision but have not been retained in the system notebooks.</p> <p>Interview with plant engineers has been documented. However, plant walkdown details are not provided in the Standby Liquid Control, Core Standby Cooling, High Pressure Core Spray, and Reactor Core Isolation Cooling system notebooks.</p> <p>Perform plant walkdowns with system engineers and plant operators. Better document the walkdowns performed in support of the PRA and reference those walkdowns in each system notebook to achieve CC II.</p>	Supporting Requirement Met (CC I)	Documentation issue. No impact. The majority of the LaSalle PRA System Notebooks include documented Operator Interviews and Walkdowns. The peer review team desired that every System Notebook include such documentation and that walkdowns be performed with both Ops and Systems personnel on the walkdown.

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SY-C3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to the impact discussion for Supporting Requirement QU-E4.
HR-A1	This required technical approach to determine the pre-initiator human error probabilities (HEPs) is probably met; however, there is no documented list of the procedures.	Supporting Requirement Not Met.	Documentation issue. No impact. Peer review team did not identify any expected pre-initiator HEPs missing from the models, and they stated that they believed the review was done but they desired to see greater documentation.
HR-A2	The documentation states procedures were reviewed. This requirement is not met because documentation does not provide evidence of the procedures reviewed. This is also referenced to HR-A1 SR as well.	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement HR-A1.
HR-B1	There does not appear to be any screening list or discussion except for dependency. The identification process is described in the HRA notebook Section 2.3.2 and information located in the system notebooks.	Supporting Requirement Met (CC I)	Refer to impact discussion for Supporting Requirement HR-A1.

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HR-G6	<p>Table 5.1-2 summarizes the post-initiator HEPs in tabular form, but no consistency check is discussed in the analysis.</p> <p>The final HEP values need to be compared against each other to check their reasonableness. Table 5.1-2 appears to have assembled for this purpose, but the analysis contains no discussion of any such consistency check.</p>	Supporting Requirement Not Met	Documentation issue. No impact. The EGC HRA best practices direct performance of a reasonableness check, and this was performed for the LaSalle PRA. Peer Review team desired to see a detailed discussion of the reasonableness check.
HR-I3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.
DA-C8	<p>Basic events used to model the standby status of various plant systems use a mixture of plant-specific operational data and engineering judgment. For the plant Service Water system and several other systems, standby estimates have been determined from procedures and operating data (see Appendix G of LS-PSA-010). For other components, assumptions are used (e.g., 50% probability of either of two pumps in a system is in standby). So, overall LaSalle has some Category II attributes and some Category I attributes.</p> <p>Collect plant-specific data for all of the basic events that reflect standby status to meet Category II requirements.</p>	Supporting Requirement Met (CC I).	Non-significant impact. The LaSalle PRA uses primarily plant-specific information for configuration probabilities. Peer Review team desired that <u>all</u> configuration probabilities used in the PRA be based on plant-specific data.

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SUPPORTING REQUIREMENTS	DESCRIPTION OF GAP	PEER REVIEW ASSESSMENT	IMPACT ON BASE PRA
DA-C10	<p>LS-PSA-010 Component Data Notebook, Appendix C, page C-24 states "No actual data or estimates for these parameters are provided by system managers. Data from the MSP1 basis document, Scoping and Performance Criteria Document, and 2003 data notebook is used." However, no discussion of how surveillance tests were used is provided in the PRA. Category I is met, but it is unclear if Category II requirements are met.</p> <p>The documentation should describe how tests were counted to fully meet the requirements of this SR.</p>	Supporting Requirement Met (CC I).	Non-significant impact. The PRA data work is based on MSP1 and MR data. Any changes to plant-specific failure rates from a revised rigorous accounting of test procedures vs. MR and MSP1 data is expected to be non-significant.
DA-E3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.
IF-C3b	<p>Appendix D addresses flow through drain lines (e.g., 3I4 and 3J5) and addresses doors as well. RG 1.200 appends the Category II requirements to include the potential for barrier unavailability, including maintenance. Barrier unavailability does not appear to have been discussed; however, given the nature of the major flooding scenarios it will probably make little difference.</p> <p>In order to meet the Category II requirements of RG 1.200 one must address potential unavailability of barriers that affect the propagation of water.</p>	Supporting Requirement Met (CC I).	Documentation issue. No impact. Flood barrier unavailability is considered and included in the internal flood analysis. Peer review team desired to see more extensive discussions on this topic; however, the team expected any resulting changes to the model results would be non-significant.

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SUPPORTING REQUIREMENTS	DESCRIPTION OF GAP	PEER REVIEW ASSESSMENT	IMPACT ON BASE PRA
IF-F3	<p>The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.
QU-D1a	<p>ER-AA-600-1015 Attachment 2, "Review of Updated PRA Model," contains specific guidance for reviewing a sample of accident sequences/cutsets to determine that the logic of the cutset or sequence is correct. Sections 6.3.1 and 6.5 of LS-PSA-014 discuss the top 10 core damage frequency (CDF) and large early release frequency (LERF) cutsets, respectively. The model appears to be reasonable based on these discussions. However, the top 10 CDF cutsets represent only about 31% of the total CDF. The review team felt that additional cutsets, representing more % of the total CDF should be reviewed and discussed.</p> <p>In response to a query from the review team, the LaSalle PRA team stated that additional cutsets were reviewed, but were not documented. The PRA team should provide evidence that such a review was performed by documenting it in the Quantification Notebook.</p>	Supporting Requirement Not Met.	Documentation issue. No impact. Cutset review is performed as part of the PRA update quantification and documentation process. Peer review team desired to see greater documentation of such a review.

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QU-D4	<p>ER-AA-600-1015 Attachment 2, "Review of Updated PRA Model," contains specific guidance for reviewing a sample of accident sequences/cutsets to determine that the logic of the cutset or sequence is correct.</p> <p>Section 2 of LS-PSA-014 Quantification Notebook documents a review of top 10 cutsets; however, there is no documentation of a review of non-significant cutsets.</p> <p>In response to a query from the review team, the LaSalle PRA team stated that additional non-significant cutsets were reviewed, but were not documented. The PRA team should provide evidence that such a review was performed by documenting it in the Quantification Notebook.</p>	Supporting Requirement Not Met.	Documentation issue. No impact. Cutset review is performed as part of the PRA update quantification and documentation process. Peer review teams desired to see greater documentation of such a review.
QU-E2	<p>The Summary Notebook includes documentation of key sources of uncertainty; however, with the changes to eliminate "key" from the SR definition, this SR cannot be considered met.</p> <p>Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.</p>	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.

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SUPPORTING REQUIREMENTS	DESCRIPTION OF GAP	PEER REVIEW ASSESSMENT	IMPACT ON BASE PRA
QU-E4	<p>Clarification of RG 1.200 issued in July 2007 modifies this requirement to read "For each source of model uncertainty and related assumption identified in QU-E1 and QU-E2, respectively, IDENTIFY how the PRA model is affected (e.g., introduction of a new basic event, changes to basic event probabilities, change in success criterion, introduction of a new initiating event)." Given that the requirements QU-E2 have not been met, this SR is consequently not met.</p> <p>The changes to this SR as identified by the NRC via a Federal Register Notice in July 2007 indicate that for all sources of uncertainty, respectively, identify how the PRA model is affected.</p> <p>Once items for QU-E1 and QU-E2 are identified per the new requirements, identify how the PRA model is affected (e.g. introduction of a new basic event, changes to basic event probabilities, change in success criterion, introduction of a new initiating event) for each item.</p>	Supporting Requirement Not Met.	<p>The LaSalle PRA Summary Notebook provides an extensive discussion of both parametric and modeling uncertainty and sensitivity studies for the base PRA.</p> <p>The peer reviewers assessed the sources of uncertainty as not met in anticipation of the NUREG-1855 [Reference 10] and EPRI 1016737 [Reference 11] specific process yet to be issued at the time of review.</p> <p>The LaSalle uncertainty and sensitivity discussions in the base PRA are judged to be consistent with, or exceed the recently issued NUREG-1855 guidance; however, each STI change assessment will follow the NUREG-1855 construct.</p>
QU-F3	<p>A detailed description of accident sequences is provided for the top 10 accident sequences which equates to ~70% of the CDF. To meet this SR, a detailed description of significant accident sequences is required. Since no definition of significant is provided in QU-F6, then a detailed description for up to 95% of the accident sequences is required to meet this SR.</p> <p>Provide a detailed description for the remaining accident sequences that comprise up to 95% of the CDF. Note that providing this information would also support meeting SR QU-D1a.</p>	Supporting Requirement Met (CC I).	<p>Documentation issue. No impact. Such information is documented in the PRA Quantification Notebook. Peer review team desired to see more detailed documentation.</p>

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QU-F4	Clarification of RG 1.200 issued in July 2007 modifies this requirement to read "DOCUMENT the characterization of the sources of model uncertainty and related assumptions (as identified in QU-E4)." Given that the requirements QU-E4 have not been met, this SR is consequently not met.	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.
QU-F6	The LaSalle analysis appears to use typical definitions for significant basic event, significant cutset and significant accident sequence; however, such definitions are never explicitly stated. Therefore, the SR is not met. Document the quantitative definition used for significant basic event, significant cutset, and significant accident sequence (also refer to LE-G6).	Supporting Requirement Not Met.	Documentation issue. No impact.
LE-F3	This requirement is not met since the SR is tied back to items identified in QU-E2 and QU-E4. Since QU-E2 and QU-E4 are not met yet, this SR is also not met.	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.
LE-G4	The LS-PSA-013 notebook discusses the industry "key sources of uncertainty" per EPRI guidance. However, the current analysis does not fully meet the requirements of RG 1.200, which requires a discussion of sources of model uncertainty and related assumptions. Also, there may be some plant-specific assumptions made that may not be fully captured by the generic list of potential sources of uncertainty. Expand the existing treatment of sources of uncertainty to consider sources of model uncertainty and related assumptions. Consideration should also be given to potential plant-specific assumptions that should also be noted as sources of uncertainty. NUREG-1855 and an upcoming EPRI Treatment of Uncertainty report should provide more guidance on how to meet this SR in the future.	Supporting Requirement Not Met.	Refer to impact discussion for Supporting Requirement QU-E4.

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LE-G6	<p>The definition in the American Society of Mechanical Engineers (ASME) standard for the significant sequence is most likely used in the LaSalle LERF analysis. However, the fact that this definition may be used is not documented in the notebooks.</p> <p>Document the definition in the Level 2 notebook for significant accident progression sequence (also refer to QU-F6)</p>	Supporting Requirement Not Met.	Documentation issue. No impact.