

RS-10-109

June 23, 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

- References:**
1. 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
 2. Letter from C. S. Goodwin (U.S. NRC) to C. G. Pardee (Exelon Nuclear), "LaSalle County Station, Units 1 and 2 – Request for Additional Information Related to Adoption of TSTF-425, Revision 3 (TAC Nos. ME3363 and ME3364)," dated May 26, 2010

In Reference 1, 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. The NRC requested additional information to support review of the proposed change in Reference 2. In response to this request, EGC is providing the attached information.

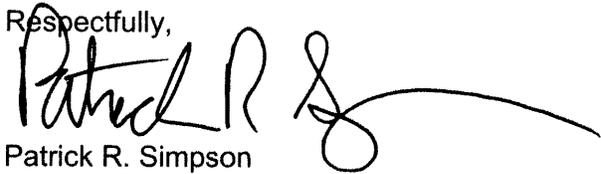
EGC has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachments 6 and 1, respectively, of Reference 1. The additional information provided in this submittal does not affect the 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 23rd day of June 2010.

Respectfully,

A handwritten signature in black ink, appearing to read "Patrick R. Simpson", with a long horizontal flourish extending to the right.

Patrick R. Simpson
Manager – Licensing

Attachment: Response to Request for Additional Information

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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NRC Request 1

In Table A.2-1 "LaSalle PRA 2008 Peer Review Results," of Attachment 2 "Documentation of Probabilistic Risk Assessment Technical Adequacy," of the submittal, supporting requirement IE-A7 is identified as being Capability Category I in that no review for initiating event precursors was performed. The disposition of this item states that it is only documentation; however, neither the description of the gap or its impact on the base model states that a precursor review was actually performed for the LSCS probabilistic risk assessment (PRA) model. In fact, the disposition states that no additional initiating event categories "would be" identified, which indicates that a precursor review was not performed. The licensee needs to clarify that a precursor review was performed and simply not documented, or else disposition why not having performed a precursor review is acceptable for this application when capability category II is the requirement per Nuclear Energy Institute (NEI) 04-10 "Risk-informed Technical Specifications Initiative 5b, Risk-Informed Method Fix Control of Surveillance Frequencies."

Response

The NRC Request states that Table A.2-1 for supporting requirement IE-A7 identifies that "no review for initiating event precursors was performed." However, a review for initiating event precursors was performed in support of the LaSalle County Station (LSCS) PRA. As stated in Reference 1 for supporting requirement IE-A7,

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.

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).

The intent of supporting requirement IE-A7 is to review plant specific operating experience for precursor events to identify new initiating event categories. Initiating event categories have been identified in a number of initiating event and PRA studies over the past 30 years (e.g., References 2, 3, and 4). In addition, LSCS has reviewed its individual support systems for potential Support System Initiating Events (SSIEs) (e.g., Loss of Circulating Water, Loss of Service Water, Loss of Turbine Building Closed Cooling Water, and Loss of Reactor Building Closed Cooling Water) as part of PRA the update/development process.

Based on the above, more review of the plant specific operating records for additional potential pre-cursor events would not be likely to identify any new initiating event categories that would be included in the LSCS PRA. Therefore, the gap for supporting requirement IE-A7 is to enhance the documentation to better include the information above and does not impact the technical quality of the LSCS PRA to support the proposed license amendment request.

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NRC Request 2

In Table A.2-1 of Attachment 2 of the submittal, supporting requirement SC-B5 is identified as being not met in that the success criteria were checked for reasonableness and acceptability by cross comparisons or other methods. While the peer review finding specifically acknowledged some code cross comparison, it still found the requirement to be not met. The disposition of this finding states that it is a documentation concern, indicating that additional checks of the success criteria, consistent with the methods identified in the standard, have been done but simply were not documented. This is inconsistent with the peer review team finding. The licensee needs to clarify that the success criteria checks required by the standard have been performed, but simply are undocumented, or else disposition why not having performed such reviews is acceptable for this application.

Response

The LSCS success criteria were reviewed consistent with the requirements of supporting requirement SC-B5. The success criteria were reviewed for reasonableness based on the following:

- Comparison of success criteria (e.g., thermal hydraulic calculations) against boiling water reactors (BWRs) of similar nuclear steam supply system design (e.g., Columbia Generating Station and Nine Mile Point Unit 2);
- Comparison of success criteria (e.g., thermal hydraulic calculations) against BWRs of similar containment design (e.g., Columbia Generating Station, Nine Mile Point Unit 2, and Limerick Generating Station); and
- Comparison of thermal hydraulic calculations for the previous LSCS Risk Methods Integration and Evaluation Program (RMIEP) MELCOR runs in NUREG/CR-4832 (i.e., Reference 2) and the Modular Accident Analysis Program (MAAP) runs used to support the LSCS PRA.

The LSCS success criteria were comparable to other BWRs of similar design when accounting for differences in plant unique designs. The peer review team acknowledged that the success criteria used for LSCS appear to be consistent with those of other similar BWRs. Therefore, the success criteria checks required by the standard have been performed, but simply were not documented to the level of detail desired by the peer review team.

NRC Request 3

In Table A.2-1 of Attachment 2 of the submittal, supporting requirements HR-A1 and HR-A2 are identified as being not met, and HR-B1 are identified as being met at Capability Category I. These requirements address the need to review plant procedures and operational practices to identify potential alignment and miscalibration opportunities, and to apply specific screening criteria. The disposition of these items states that it is a documentation concern, but the basis provided is only that the peer review team did not identify any missing basic events in the PRA model. The licensee needs to clarify that the review of procedures and screening of identified

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events was in fact done, or should otherwise disposition why not having performed these reviews is acceptable for this application.

Response

The LSCS procedures were reviewed and potential pre-initiator events were screened appropriately. The pre-initiator human error event approach used for the LSCS PRA model meets the underlying basis of the identified supporting requirements. There is no deficiency with regard to technical adequacy of the LSCS PRA.

The LSCS PRA systems analysis-based approach to identification of pre-initiator human failure events (HFEs) is that the HFEs of interest should be those associated with the functions, systems, or components that are significant contributors to the PRA results. The LSCS PRA identifies potential misalignment and miscalibration pre-initiator errors based on systems analysis methods (e.g., identifying which equipment can be misaligned and fail a train (or trains), which instrumentation could be postulated to be miscalibrated and fail a train (or trains)). The results of the assessment are consistent with the assessment conducted for the supporting requirements under high level requirement (HLR) SY-A. A review of procedures alone is not expected to identify all the pre-initiators that should be included in a PRA (e.g., some pre-initiator misalignment events would not be uncovered by a procedure review). The LSCS process is sufficiently systematic to provide a high degree of confidence that the relevant HFEs have been identified. The LSCS PRA Human Reliability Analysis (HRA) explicitly documents 68 pre-initiator operator actions.

This approach is also consistent in that "misalignment" or "miscalibration" activities that do result in common cause impacts are rarely significant contributors to PRA results. Given the difference in the method used to achieve the results required by HLR HR-C of the PRA Standard, the gap has been identified only as a documentation issue.

In addition, potential LSCS pre-initiator HEPs are allowed to be screened based on the following attributes:

- Auto realignment of equipment,
- Post maintenance test, and
- Position indication available to Control Room or checked once per shift.

This is consistent with Capability Category II/III of supporting requirement HR-B1. The gap identified for supporting requirements HR-A1, HR-A2, and HR-B1 does not impact the technical quality of the LSCS PRA to support the proposed license amendment request.

NRC Request 4

In Table A.2-1 of Attachment 2 of the submittal, supporting requirement DA-C8 is identified as meeting only Capability Category I based on estimating the time components are in standby status, rather than evaluating plant operational records. The disposition of this deficiency states that it has a non-significant impact, but no basis is provided for this conclusion. (The disposition also restates the peer review team's observation that some standby times are based

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appropriately on operational records, but then states that the team "...desired that all configuration probabilities used in the PRA be based on plant-specific data." The staff notes that basing all standby times on operational records is the requirement of the standard for Capability Category II, and is not simply a peer review team preference.) The licensee needs to identify its basis for concluding that estimates of standby times in lieu of plant operational records has a non-significant impact on the PRA results for this application.

Response

The system or train standby times are estimated based on the surveillance test intervals, which is also consistent with actual practice. The use of scheduled and prescribed surveillance tests as the basis for the number of standby hours is equal to or greater than the actual number of hours between tests. Unplanned tests are not credited in the number of standby hours between tests. This is conservative since it leads to a slightly higher failure rate than might be calculated from the use of the plant operating records number of standby hours. This difference does not significantly impact the risk profile. The use of the frequency of LSCS component surveillance tests are appropriate estimates for the system or train standby times because the surveillance tests are monitored in accordance with specific plant and corporate procedures.

Additionally, Step 8 of the NEI 04-10 methodology (i.e., Reference 5) requires that an appropriate time-related failure contribution be utilized in the surveillance frequency change assessment. Step 14 requires that sensitivity studies regarding the choice of that value be performed.

Based on the information above, the gap identified for supporting requirement DA-C8 does not impact the technical quality of the LSCS PRA to support the proposed license amendment request.

NRC Request 5

In Table A.2-1 of Attachment 2 of the submittal, supporting requirement DA-C10 is identified as meeting only Capability Category I. For this supporting requirement, the additional requirements for Capability Category II require a review of surveillance tests for different component failure modes to assure proper statistical counting of demands and failures, if such a decomposition of failure modes is made. The licensee disposition of this item only states that any impact is "expected" to be non-significant, but does not address how this expectation has been reached. The licensee needs to identify its basis for this deficiency being non-significant for this application.

Response

The number of plant specific demands is based on the number of surveillance tests performed, which is conservative (i.e., lower) with respect to the actual number of demands experienced. This approach captures the appropriate number of demands performed during each test (i.e., reflects the number of demands within the test procedure if more than one). Unplanned tests are not included in the number of demands. This is conservative since it leads to a slightly higher failure rate than might be calculated from the use of the actual demand count. Based on

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the Bayesian update process incorporated for calculating the LSCS component failure data, this difference does not significantly impact the risk profile.

Additionally, Step 14 of the NEI 04-10 methodology (i.e., Reference 5) requires that sensitivity studies regarding the choice of failure rate be performed.

The gap identified for supporting requirement DA-C10 is that the documentation should be enhanced to further support the methodology for using surveillance test procedures and the determination of the number of demands for components within the tests. The gap identified for supporting requirement DA-C10 does not impact the technical quality of the LSCS PRA to support the proposed license amendment request.

References

1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U.S. NRC, "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," dated April 26, 2010
2. NUREG/CR-4832, "Analysis of the LaSalle Unit 2 Nuclear Power Plant: Risk Methods Integration and Evaluation Program (RMIEP)," dated July 1992
3. NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," dated December 1990
4. NUREG/CR-5750, "Rates of Initiating Events at U.S. Nuclear Power Plants – 1987-1995," dated February 1999
5. Nuclear Energy Institute (NEI) 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," dated April 2007