Exelon Generation

10 CFR 50.54(f)

RS-16-125

August 31, 2016

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
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: Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. NRC Letter, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012 (ML12053A340)
2. NRC Letter, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated October 27, 2015 (ML15194A015)
3. NEI Letter, Request for Endorsement of Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation (EPRI 3002007148), dated February 23, 2016 (ML16055A017)
4. EPRI 3002007148, Seismic Evaluation Guidance Spent Fuel Pool Integrity Evaluation, February 2016
5. NRC Letter, Endorsement of Electric Power Research Institute Report 3002007148, "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation", dated March 17, 2016 (ML15350A158)
6. Exelon Generation Company, LLC Letter to USNRC, Seismic Hazard and Screening Report (Central and Eastern United States (CEUS) Sites), Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 31, 2014 (RS-14-068) (ML14091A013)

7. NRC Letter to Exelon Generation Company, LLC, LaSalle County Station, Units 1 and 2, Staff Assessment of Information Provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated April 21, 2015 (ML15013A132)
8. EPRI 1025287, Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details [SPID] for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic, February 2013

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information per 10 CFR 50.54(f) (Reference 1) to all power reactor licensees. Enclosure 1, Item (9) of the 50.54(f) letter requested addressees to provide spent fuel pool (SFP) integrity evaluations with any actions identified to address any discovered vulnerabilities. By letter dated October 27, 2015 (Reference 2), the NRC transmitted final seismic information request tables which identified that LaSalle County Station, Units 1 and 2, is to conduct limited scope SFP evaluations. By Reference 3, Nuclear Energy Institute (NEI) submitted an Electric Power Research Institute (EPRI) report entitled, Seismic Evaluation Guidance Spent Fuel Pool Integrity Evaluation (EPRI 3002007148) (Reference 4) for NRC review and endorsement. NRC endorsement was provided by Reference 5.

EPRI 3002007148 provides criteria for evaluating the seismic adequacy of a SFP to the reevaluated ground motion response spectrum (GMRS) hazard levels. The reevaluated GMRS, used for the SFP seismic demand, are documented in Reference 6 and endorsed by the NRC by Reference 7. This report supplements the guidance in the Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details (SPID) (Reference 8), for plants where the GMRS peak spectral acceleration is less than or equal to 0.8g. Section 3.3 of EPRI 3002007148 lists the parameters to be verified to confirm that the results of the report are applicable to LaSalle County Station, Units 1 and 2, and that the LaSalle County Station, Units 1 and 2, SFPs are seismically adequate in accordance with Near Term Task Force (NTTF) 2.1 Seismic evaluation criteria.

The attachment to this letter provides the data for LaSalle County Station, Units 1 and 2 that confirms applicability of the EPRI 3002007148 criteria, confirms that the SFPs are seismically adequate, and provides the requested information in response to Item (9) of the 50.54 (f) letter associated with NTTF Recommendation 2.1 Seismic evaluation criteria.

This letter closes Regulatory Commitment No. 2 submitted to the NRC in Reference 6.

This letter contains no new regulatory commitments or revisions to existing regulatory commitments.

If you have any questions regarding this report, please contact Ronald Gaston at 630-657-3359.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st day of August 2016.

Respectfully submitted,

Glen T. Kaegi

Glen T. Kaegi
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Site-Specific Spent Fuel Pool Criteria for LaSalle County Station, Units 1 and 2

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector – LaSalle County Station
NRC Project Manager, NRR – LaSalle County Station
Mr. Nicholas DiFrancesco, NRR/JLD/JHMB, NRC
Illinois Emergency Management Agency - Division of Nuclear Safety

ATTACHMENT

Site-Specific Spent Fuel Pool Criteria for LaSalle County Station, Units 1 and 2

The 10 CFR 50.54(f) letter requested that, in conjunction with the response to Near Term Task Force (NTTF) Recommendation 2.1, a seismic evaluation be made of the SFP. More specifically, plants were asked to consider "all seismically induced failures that can lead to draining of the SFP." Such an evaluation would be needed for any plant in which the ground motion response spectrum (GMRS) exceeds the safe shutdown earthquake (SSE) in the 1 to 10 Hz frequency range. The staff confirmed through References A and D that the GMRS exceeds the SSE and concluded that a SFP evaluation is merited for the LaSalle County Station, Units 1 and 2. By letter dated March 17, 2016 (Reference B) the NRC staff determined that EPRI 3002007148 was an acceptable approach for performing SFP evaluations for plants where the peak spectral acceleration is less than or equal to 0.8g.

The table below lists the criteria from Section 3.3 of EPRI 3002007148 along with data for LaSalle County Station, Units 1 and 2, that confirms applicability of the EPRI 3002007148 criteria and confirms that the SFP is seismically adequate and can retain adequate water inventory for 72 hours in accordance with NTTF 2.1 Seismic evaluation criteria.

SFP Criteria from EPRI 3002007148	Site-Specific Data
Site Parameters	
1. The site-specific GMRS peak spectral acceleration at any frequency should be less than or equal to 0.8g.	The GMRS peak spectral acceleration in Reference C (Table 2.4-1) as accepted by the NRC in Reference D is 0.695g, which is ≤ 0.8g; therefore, this criterion is met for LaSalle County Station, Units 1 and 2.
Structural Parameters	
2. The structure housing the SFP should be designed using an SSE with a peak ground acceleration (PGA) of at least 0.1g.	The SFP is housed in the Reactor Building, which is seismically designed to the site SSE with a PGA of 0.20g per Reference C, Section 3.1 and Reference F. The LaSalle County Station, Units 1 and 2, PGA is greater than 0.1g; therefore, this criterion is met for LaSalle County Station, Units 1 and 2.
3. The structural load path to the SFP should consist of some combination of reinforced concrete shear wall elements, reinforced concrete frame elements, post-tensioned concrete elements and/or structural steel frame elements.	The structural load path from the foundation base mat to the SFP consists of reinforced concrete shear walls, slabs and framing members (Reference E); therefore, this criterion is met for LaSalle County Station, Units 1 and 2.

SFP Criteria from EPRI 3002007148	Site-Specific Data
4. The SFP structure should be included in the Civil Inspection Program performed in accordance with Maintenance Rule.	The SFP structure is included in the LaSalle County Station, Units 1 and 2, Structures Monitoring Program (Reference G) in accordance with 10 CFR 50.65 (Maintenance Rule), which monitors the performance or condition of structures, systems, and components (SSCs) in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. Therefore, this criterion is met for LaSalle County Station, Units 1 and 2.
Non-Structural Parameters	
5. To confirm applicability of the piping evaluation in Section 3.2 of EPRI 3002007148, piping attached to the SFP up to the first valve should have been evaluated for the SSE.	Piping attached to the SFP is evaluated to the SSE as documented in Section 9.1 of Reference F; therefore, this criterion is met for LaSalle County Station, Units 1 and 2.
6. Anti-siphoning devices should be installed on any piping that could lead to siphoning water from the SFP. In addition, for any cases where active anti-siphoning devices are attached to 2-inch or smaller piping and have extremely large extended operators, the valves should be walked down to confirm adequate lateral support.	As documented in Section 9.1 of Reference F, all piping which enters the pool is equipped with a vacuum breaker, which prevents possible siphoning of the pool. As described, anti-siphoning devices are installed on all SFP piping that could lead to siphoning; therefore, this criterion is met for LaSalle County Station, Units 1 and 2. No anti-siphoning devices are attached to 2-inch or smaller piping with extremely large extended operators; therefore, this criterion is met for LaSalle County Station, Units 1 and 2.
7. To confirm applicability of the sloshing evaluation in Section 3.2 of EPRI 3002007148, the maximum SFP horizontal dimension (length or width) should be less than 125 ft, the SFP depth should be greater than 36 ft, and the GMRS peak Sa should be <0.1g at frequencies equal to or less than 0.3 Hz.	The LaSalle County Station, Units 1 and 2, SFP has a length of 40 ft, a width of 34 ft and a depth of 38.75 ft based on Reference H; therefore, this criterion is met. The LaSalle County Station, Units 1 and 2 GMRS maximum spectral acceleration in the frequency range less than 0.3 Hz is 0.0706g from Reference C (Table 2.4-1), which is less than 0.1g; therefore, this criterion is met.

SFP Criteria from EPRI 3002007148	Site-Specific Data
8. To confirm applicability of the evaporation loss evaluation in Section 3.2 of EPRI 3002007148, the SFP surface area should be greater than 500 ft^2 and the licensed reactor core thermal power should be less than 4,000 MWt per unit.	The surface area of the LaSalle County Station, Units 1 and 2 SFP is 1360 ft^2 per unit (Reference H) which is greater than 500 ft^2; and licensed reactor thermal power for LaSalle County Station, Units 1 and 2 is 3546 MWt per unit (Reference J) which is less than 4,000 MWt per unit; therefore, these criteria are met.

Attachment References:

A. NRC Letter, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated October 27, 2015 (ML15194A015)

B. NRC Letter, provides endorsement of EPRI 3002007148, dated March 17, 2016 (ML15350A158)

C. Exelon Generation Company, LLC Letter to USNRC, Seismic Hazard and Screening Report (Central and Eastern United States (CEUS) Sites), Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 31, 2014 (RS-14-068) (ML14091A013)

D. NRC Letter to Exelon Generation Company, LLC, LaSalle County Station, Units 1 and 2, Staff Assessment of Information Provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated April 21, 2015 (ML15013A132)

E. LaSalle Station Drawings:
M-6, Revision Y, General Arrangement Reactor Building Floor Plans
M-17, Revision M, General Arrangement Section E-E and F-F
S-226, Revision T, Reactor Bldg. Framing Section 2-2 Upper Area Unit 1
S-726, Revision M, Reactor Building Framing Unit 2 Section 202-202 Upper Area

F. LaSalle Updated Final Safety Analysis Report Revision 22, April 22, 2016

G. ER-LA-450-1006, Revision 2, LAS Structures Monitoring Instructions Rev 2 (Attachment 1)

H. LaSalle Station Drawings
S-220, Revision AE, Reactor Building Operating Floor Framing Plan Elevation 843-6 East Area
S-221, Revision AR, Reactor Building Operating Floor Framing Plan Elevation 843-6 West Area
S-720, Revision AE, Reactor Building Operating Floor Framing Plan Elevation 843-6 East Area

S-721, Revision AF, Reactor Building Operating Floor Framing Plan Elevation 843-6 West Area

J. LaSalle County Station, Units 1 and 2, Facility Operating License Nos. NPF-11 and NPF-18