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

June 8, 2015

Mr. Michael P. Gallagher
Vice President, License Renewal Projects
Exelon Generation Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE LASALLE COUNTY STATION, UNITS 1 AND 2 LICENSE RENEWAL APPLICATION – SET 3 (TAC NOS. MF5347 AND MF5346)

Dear Mr. Gallagher:

By letter dated December 9, 2014, Exelon Generation Company, LLC (Exelon) submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses NPF-11 and NPF-18 for LaSalle County Station (LSCS), Units 1 and 2, respectively. The staff of the U.S. Nuclear Regulatory Commission (NRC or the staff) is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Mr. John Hufnagel, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-3019 or by e-mail at Jeffrey.Mitchell2@nrc.gov.

Sincerely,

/RA/

Jeffrey S. Mitchell, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure:
As stated

cc: Listserv

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ADAMS Accession Number: **ML15131A413** *Concurred via e-mail

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DATE	6/ 3 /15	6/ 4 /15	6/ 4 /15	6/ 8 /15	6/ 8 /15

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Letter to Michael Gallagher from Jeffrey S. Mitchell dated June 8, 2015

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LASALLE COUNTY STATION, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION – SET 3
(TAC NOS. MF5347 AND MF5346)

RAI 2.3.3.12-1:

Background:

For LaSalle County Station, Units 1 and 2 (LSCS), the staff reviewed the License Renewal Application (LRA); drawings; Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, "Fire Protection System," and Fire Protection Report (FPR) which describe the fire protection program at LSCS, and how it complies with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.48, "Fire protection," and the guidelines of Appendix A to Branch Technical Position (BTP) Auxiliary Power System (ASP) 9.5-1.

Issue:

The following boundary drawing shows the following fire protection systems/components as not within the scope of license renewal (i.e., not colored in green):

LRA Drawing	Systems/Components	Location
LR-LAS-M-78, Sheet 1	Flame arrestors	E4 and E5
LR-LAS-M-78, Sheet 1	CO_2 fire suppression system components	C4 and C5

Request:

Verify whether the fire protection systems/components listed above are within the scope of license renewal in accordance with 10 CFR 54.4(a) and whether they are subject to an aging management review (AMR) in accordance with 10 CFR 54.21(a)(1). If they are not within the scope of license renewal and are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.12-2:

Background:

For LSCS, the staff reviewed the LRA; drawings; UFSAR, Section 9.5.1, "Fire Protection System," and FPR which describe the fire protection program at LSCS, and how it complies with the requirements of 10 CFR 50.48, "Fire protection," and the guidelines of Appendix A to BTP ASP 9.5-1.

ENCLOSURE

Issue:

Tables 2.3.3-12 and 3.3.2-12 of the LRA do not include the following fire protection components:

- standpipe risers
- fire suppression system filter housings
- smoke and heat vent housings
- fire barrier coatings and wraps

Request:

Verify whether the fire protection components listed above are within the scope of license renewal in accordance with 10 CFR 54.4(a) and whether they are subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are not within the scope of license renewal and are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI 2.3.3.12-3:

Background:

LRA Section 2.3.3.12, "Fire Protection System," indicates the drains from fire water system components and areas protected by the fire water system which are identified with the Plant Drainage System.

LRA Section 2.3.3.16, "Plant Drainage System," indicates that the portions of the floor drain systems in the Auxiliary Building, Diesel Generator Building, and Turbine Building are credited for the removal of fire water from areas containing safe-shutdown equipment and are in scope for Fire Safe Shutdown. Further, Section 2.3.3.16 indicates that the portions of the floor drain system in the Diesel Generator Building are credited to prevent the accumulation of oil in areas containing safe-shutdown equipment and are in scope for Fire Safe Shutdown. Table 2.3.3-16, "Components Subject to Aging Management Review," of the LRA does not include fire water and oil floor drains as a component type subject to an AMR.

Issue:

It is not clear to the NRC staff if the Auxiliary Building, Diesel Generator Building, and Turbine Building fire water floor drains and Diesel Generator Building floor drains credited to prevent oil accumulation have been appropriately identified as a component type subject to an AMR.

Request:

Verify whether the fire water floor drains and Diesel Generator Building oil floor drains are subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RAI B.2.1.9-1:

Background:

LRA Section B.2.1.9 describes the following operating experience related to jet pumps that are included in the scope of the applicant's BWR Vessel Internals program.

In 2004, all the Unit 1 jet pump riser brace RS-8 and RS-9 welds were visually inspected and indications were noted at the RS-9 welds on the jet pump 5 and 6 sections of the jet pump 5/6 riser brace, and one indication was noted on the jet pump 9 side of the jet pump 9/10 riser brace. As a result, a corrective action program issue report was initiated and a clamp was installed at the slip joint on all 20 jet pumps.

Section 4.3.4 of BWRVIP-41 indicates that flow induced vibration caused by leakage at jet pump slip joints has been known to occur and cause damage to reactor internals. Additionally, the EPRI-NRC Technical Exchange Meeting Presentation, "Jet Pump Degradation Management," dated May 25-26, 2010 (ADAMS Accession No. ML101590703) describes industry operating experience that flow pressure pulsations from recirculation pumps at vane passing frequency (also called pump resonance) and flow induced vibration from turbulent flow are potential causes for jet pump degradation.

In addition, Section 2.3.8 and its subsections of BWRVIP-41 describe degradation assessment and recommended inspections for jet pump restrainer bracket assembly. These sections indicate that excessive wear on the wedge bearing surface and misalignment has been observed in the industry operating experience. These sections also indicate that excessive wear at the wedge bearing surface is an indication of substantial vibration and may indicate that other jet pump components may be damaged.

Issue:

The LRA does not clearly address whether the applicant's program resolved the concern about jet pump vibration resulting from slip joint leakage flow instability, pump resonance or turbulent flow. The LRA does not address assessment of plant-specific operating experience regarding jet pump vibration and loss of material due to wear of jet pump wedges and restrainer brackets at their interfaces. The staff needs additional information to determine whether the program needs to be enhanced with additional aging management activities and inspections based on adequate assessment of operating experience.

Request:

1. Discuss how the applicant's program resolved the concern about jet pump vibration for LSCS, Units 1 and 2.

2. Provide the assessment of plant-specific operating experience regarding jet pump vibration and loss of material due to wear of jet pump wedges and restrainer brackets at their interfaces. As part of the response, clarify why a program enhancement is not necessary for adequate management of jet pump degradation (such as fatigue and wear) due to jet pump vibration.

RAI B.2.1.17-1:

Background:

LRA Section B.2.1.17 states an exception (Exception No. 1) to the "Detection of Aging Effects" program element to use alternative testing methods (e.g., flow testing of wet-pipe sprinkler systems, flow testing of dry pipe sprinkler systems) on varying frequencies in lieu of performing main drain tests.

Issue:

It is unclear to the staff how the use of the proposed alternative testing is consistent with performing main drain tests.

Request:

Justify how the use of the proposed alternative testing methods (e.g., flow testing of wet-pipe sprinkler systems, flow testing of dry pipe sprinkler systems) to main drain tests performed at LSCS will provide reasonable assurance that flow blockage will not occur in the fire water sprinkler piping during the period of extended operation.

RAI B.2.1.17-2:

Background:

LRA Section B.2.1.17 states an exception (Exception No. 2) to performing charcoal filter deluge testing. The LRA exception states that visual inspections will be performed on one of the 11 charcoal filter deluge systems every five years. Generic Aging Lessons Learned (GALL) Report aging management program (AMP) XI.M27, as modified by LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation," states that deluge valves should be trip-tested annually at full flow or tested with air to ensure nozzles are not obstructed. LR-ISG-2012-02 also states that tests may be performed during plant shutdowns on a refuel cycle interval.

Issue:

During the audit, the staff noted that the proposed visual inspections of the charcoal filter system will only be conducted on the stainless steel portion of the piping downstream of a normally closed isolation valve. The upstream carbon steel piping will not be inspected. Deluge testing, as recommended by GALL Report AMP XI.M27, Table 4a, "Fire Water System Inspection and Testing Recommendations," would demonstrate that both the stainless steel and

carbon steel portions are not experiencing potential flow blockage. It is unclear to the staff how the use of visual examinations of the stainless steel portions of the deluge system piping will provide reasonable assurance that flow blockage is not occurring in the upstream carbon steel piping. A basis was not provided for conducting the visual inspections every 5 years when Table 4a recommends an inspection interval of no longer than a refueling outage interval.

Request:

Justify the use of performing visual examinations in lieu of full flow or air tests for the charcoal filter deluge testing. In addition, provide the basis for the five year frequency of the aforementioned testing.

RAI B.2.1.17-3:

Background:

The "Acceptance Criteria" program element of GALL Report AMP XI.M27, as amended by LR-ISG-2012-02 states, "[if] the presence of sufficient foreign organic or inorganic material to obstruct pipe or sprinklers is detected during pipe inspections, the material is removed and its source is determined and corrected."

Issue:

During the audit, the staff reviewed PI-AA-125, Rev. 2, "Corrective Action Program (CAP) Procedure," to determine if the procedure included sufficient specificity to be consistent with the "Acceptance Criteria" program element of GALL Report AMP XI.M27. It is unclear to the staff that foreign organic or inorganic material sufficient to obstruct piping or sprinklers will be removed and its source determined and corrected if it is detected during pipe inspections. Therefore the staff cannot conclude that there is reasonable assurance that flow blockage due to foreign organic or inorganic material will not occur during the period of extended operation.

Request:

Justify how the Fire Water System program "Acceptance Criteria" program element is sufficient to provide reasonable assurance that the intended function of fire water system piping will be met during the period of extended operation.

RAI B.2.1.17-4:

Background:

Procedure LOS-FP-SR3, "Fire Protection Water Spray/Sprinkler Systems Headers, Nozzles and Sprinkler Integrity Inspection," includes criteria for visually inspecting sprinkler systems for corrosion. The frequency of inspecting sprinklers per the Technical Requirements Manual (TRM), Section 3.7.k, is every 24 months. GALL Report AMP XI.M27, Table 4a, recommends that annual visual inspections for leakage, loss of fluid in the glass bulbs, and loading be conducted.

Issue:

LOS-FP-SR3 does not include inspections for leakage, loss of fluid in the glass bulbs, and loading. No basis was provided for conducting the sprinkler inspections every 2 years in lieu of the recommended annual inspections in GALL Report AMP XI.M27.

Request:

Justify the exclusion of the visual inspection criteria for leakage, loss of fluid in the glass bulbs, and loading from sprinkler inspections. Also, justify the frequency of inspections for the sprinklers.

RAI B.2.1.17-5:

Background:

National Fire Protection Association standard NFPA 25, "Standard for the Inspection, Testing, and Maintenance of Water Based Fire Protection Systems," Section 13.2.5.2 states, "[w]hen there is a 10 percent reduction in full flow pressure when compared to the original acceptance test or previously performed tests, the cause of the reduction shall be identified and corrected if necessary." LOS-FP-A3, states, "[if] any of the recorded pressure drops vary from the previous test by greater than 5 psi, we [system engineering] will generate an IR [Issue Report] if the data varies substantially."

Issue:

It is not clear to the staff how the stated testing parameters are consistent with NFPA 25, as referenced by GALL Report AMP XI.M27.

Request:

Justify how performing analysis and trending on changes in pressure will provide reasonable assurance that the main drain test will be consistent with NFPA 25, Section 13.2.5.2, as referenced by GALL Report AMP XI.M27.

RAI B.2.1.17-6:

Background:

During a search of the operating experience database, there were many issue reports generated on the fire water protection system regarding degradation of flow characteristics (i.e., C factor) in the underground fire loop. The fire protection system is a raw water system with a pressure boundary function (i.e., provide pressure-retaining boundary so that sufficient flow at adequate pressure is delivered), which ensures that the intended function of the fire protection system, as required by 10 CFR 54.4(a)(3) is successfully accomplished. Plant drawing LR-LAS-M-775, Sheet 1, provided during the audit, shows the fire protection yard loop with annotated flow testing node points. Data was provided to the staff on the C factor from years

2006 through 2014. The piping segment from the diesel driven fire pump to node 515 shows a significant degrading trend.

Issue:

It is unclear to the staff how the piping segment from the diesel driven fire pump to node 515 will be able to perform its intended function during the period of extended operation due to its significant degrading trend.

Request:

Justify how the degrading section of the fire protection yard loop from the diesel driven fire pump to node 515 will be able to perform its intended function during the period of extended operation with its current significant degrading trend.