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

July 27, 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 7 (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

July 27, 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 7 (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

DISTRIBUTION:
See next page

ADAMS Accession Number: **ML15196A529** *Concurred via e-mail

OFFICE	LA:DLR*	PM:RPB1:DLR	PM:RPB1:DLR*	BC:RPB1:DLR	PM:RPB1:DLR
NAME	YEdmonds	JMitchell	RPlasse	YDiaz-Sanabria	JMitchell
DATE	7/ 21 /15	7/ 23 /15	7/ 23 /15	7/ 23 /15	7/ 27 /15

OFFICIAL RECORD COPY

Letter to M. Gallagher from J. Mitchell dated July 27, 2015

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE LASALLE COUNTY STATION, UNITS 1 AND 2 LICENSE RENEWAL APPLICATION – SET 7 (TAC NOS. MF5347 AND MF5346)

DISTRIBUTION:

E-MAIL:
PUBLIC
RidsNrrDlr Resource
RidsNrrDlrRpb1 Resource
RidsNrrDlrRpb2 Resource
RidsNrrDlrRerb Resource
RidsNrrDlrRarb Resource
RidsNrrDlrRasb Resource
RidsNrrDlrRsrg Resource
RidsNrrPMLaSalle Resource

J. Mitchell
R. Plasse
D. Drucker
J. Danna
J. Wachutka, OGC
D. McIntyre, OPA
M. Kunowski, RIII
V. Mitlyng, RIII
P. Chandrathil, RIII
H. Logaras, RIII
C. Lipa, RIII
S. Sheldon, RIII
R. Ruiz, RIII
J. Robbins, RIII

LASALLE COUNTY STATION, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION – SET 7
(TAC NOS. MF5347 AND MF5346)

RAI 2.3.3.2-1

Background:

License Renewal Application (LRA) Section 2.1 describes the applicant's scoping methodology, which specifies how systems or components were determined to be included within the scope of license renewal, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Paragraph 54.4(a). The staff reviewed Section 2.3.3.2, "Combustible Gas Control System," and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

One review method used by the staff is to confirm the inclusion of all components subject to aging management review (AMR) by reviewing the results of the screening of components within the license renewal boundary. The staff noted during its review of the drawings and locations indicated in the table below that continuations of piping within the scope of license renewal could not be located; therefore, acceptable scoping of systems, structures and components (SSCs) could not be verified.

License Renewal Boundary Drawing Number and Location	**Continuation Issue**
LR-LAS-M-130 Sheet 1, location A/B-8	212° and 30° continuations at the containment side of penetrations M-102 and M-95, respectively, were not provided.
LR-LAS-M-130 Sheet 2, location A/B-8	212° and 30° continuations at the containment side of penetrations M-102 and M-95, respectively, were not provided.

Request:

The staff requests that the applicant provide sufficient information to locate the license renewal boundary. If the continuation cannot be shown on license renewal boundary drawings, then provide additional information describing the extent of the scoping boundary and verify whether there are additional component types subject to an AMR between the continuation and the termination of the scoping boundary. If the scoping classification of a section of the piping changes over the continuation, provide additional information to clarify the change in scoping classification.

ENCLOSURE

RAI 2.3.3.4-1

Background:

In LRA Section 2.1.5.2, subsection "Connected to and Provide Structural Support for Safety-Related SSCs," the applicant states in part "[f]or nonsafety-related SSCs directly connected to safety-related SSCs the nonsafety-related piping and supports, up to and including the first seismic or equivalent anchor…beyond the safety/nonsafety interface, are within the scope of license renewal per 10 CFR 54.4(a)(2)." The staff reviewed Section 2.3.3.4, "Control Rod Drive System," and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

The staff could not locate seismic or equivalent anchors between the safety/nonsafety interface and the end of the 10 CFR 54.4(a)(2) scoping boundary on the following drawings:

- LR-LAS-M-100-4 (B-2) downstream of safety-related valve 1C11-F381
- LR-LAS-M-146-4 (B-1) downstream of safety-related valve 2C11-F381
- LR-LAS-M-93-1 (B-8) upstream of safety-related valve 1B33-F017A
- LR-LAS-M-139-1 (B-8) upstream of safety-related valve 2B33-F017A
- LR-LAS-M-100-3 and LR-LAS-M-146-3 (C-4, 5, 6 and 7) upstream of safety-related valves 5, 3, 4 and 9
- LR-LAS-M-100-5 and LR-LAS-M-146-6 (E-1, B-4, C-4, E-4, F-4 and E-8)

Request:

The staff requests that the applicant provide additional information to locate the seismic or equivalent anchors between the safety/nonsafety interface and the end(s) of the 10 CFR 54.4(a)(2) scoping boundary.

RAI 2.3.3.11-1

Background:

LRA Section 2.1 describes the applicant's scoping methodology, which specifies how systems or components were determined to be included within the scope of license renewal, in accordance with 10 CFR 54.4(a). The staff confirms the inclusion of all components subject to AMR by reviewing the results of the screening of components within the license renewal boundary. The staff reviewed Section 2.3.3.11, "Essential Cooling Water System" and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

Drawings LR-LAS-M-87-3 (E-6) and LR-LAS-M-134-3 (D-6) show 10 CFR 54.4(a)(1) piping whose scope changes to 10 CFR 54.4(a)(2) without a change in piping classification.

Request:

The staff requests that the applicant provide sufficient information to clarify the change in scoping classification.

RAI 2.3.3.13-1

Background:

LRA Section 2.1 describes the applicant's scoping methodology, which specifies how systems or components were determined to be included within the scope of license renewal, in accordance with 10 CFR 54.4(a). The staff confirms the inclusion of all components subject to AMR by reviewing the results of the screening of components within the license renewal boundary. The staff reviewed Section 2.3.3.13, "Fuel Pool Cooling and Storage System" and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

Unit 1 drawing LR-LAS-M-98-1 shows 10 CFR 54.4(a)(1) piping whose scope changed to 10 CFR 54.4(a)(2) without a change in piping classification at the following locations:

LR-LAS-M-98, Sheet-1, Location	Piping ID
Location C-2	1FC87A upstream of valve 1FC130
Location C-5	1FC19AA downstream of valve 1FC118
Location C-8	1FC110A upstream of valve 1FC141
Location B-8	1FC01DA downstream of valve 1FC139A
Location A-8	1FC01DB downstream of valve 1FC139B

Similarly for Unit 2, drawing LR-LAS-M-144, Sheet-1, shows 10 CFR 54.4(a)(1) piping whose scope changed to 10 CFR 54.4(a)(2) without any change in system scope or piping classification at the following locations:

LR-LAS-M-144, Sheet-1, Location	Piping ID
Location C-1	2FC11DA upstream of valve 2FC141
Location B-1	2FC01DA downstream of valve 2FC139A
Location B-1	2FC01DB downstream of valve 2FC139B
Location C-4	2FC19AA downstream of valve 2FC118
Location C-7	2FC87A upstream of valve 2FC130

Request:

The staff requests that the applicant provide sufficient information to clarify the change in scoping classification.

RAI 2.3.3.13-2

Background:

LRA Section 2.1 describes the applicant's scoping methodology, which specifies how systems or components were determined to be included within the scope of license renewal, in accordance with 10 CFR 54.4(a). The staff confirms the inclusion of all components subject to AMR by reviewing the results of the screening of components within the license renewal boundary. The staff reviewed Section 2.3.3.13, "Fuel Pool Cooling and Storage System" and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

Unit 1 drawing LR-LAS-M-98-1 (C-7) shows a 10 CFR 54.4(a)(2) line 1FC11DC 10 downstream of a 10 CFR 54.4(a)(1) valve 1FC086 whose scope changed to 10 CFR 54.4(a)(2) while the piping classification changed to 'Class C' indicating ASME Section III–Class 3 piping.

Unit 2 drawing LR-LAS-M-144-1 (C-2) shows a 10 CFR 54.4(a)(2) line 2FC11DC 10 downstream of a 10 CFR 54.4(a)(1) valve 2FC086 whose scope changed to 10 CFR 54.4(a)(2) while the piping classification changed to 'Class C' indicating ASME Section III–Class 3 piping.

Request:

The staff requests that the applicant provide sufficient information to clarify the change in scoping classification.

RAI 2.3.3.16-1

Background:

In LRA Section 2.1.5.2, subsection "Connected to and Provide Structural Support for Safety-Related SSCs," the applicant states in part "[f]or nonsafety-related SSCs directly connected to safety-related SSCs the nonsafety-related piping and supports, up to and including the first seismic or equivalent anchor…beyond the safety/nonsafety interface are within the scope of license renewal per 10 CFR 54.4(a)(2)." The staff reviewed Section 2.3.3.16, "Plant Drainage System," and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

On drawing LR-LAS-M-142-1 (A-4), the staff could not locate seismic or equivalent anchors between the safety/nonsafety interface at the F.4.c termination symbol (valve 2E12-F070) and the end of the 10 CFR 54.4(a)(2) scoping boundary.

Request:

The staff requests that the applicant provide additional information to locate the seismic or equivalent anchors between the safety/nonsafety interface and the end(s) of the 10 CFR 54.4(a)(2) scoping boundary.

RAI 2.3.3.21-1

Background:

LRA Section 2.1 describes the applicant's scoping methodology, which specifies how systems or components were determined to be included within the scope of license renewal, in accordance with 10 CFR 54.4(a). The staff confirms the inclusion of all components subject to AMR by reviewing the results of the screening of components within the license renewal boundary. The staff reviewed Section 2.3.3.21, "Reactor Water Cleanup System" and the associated License Renewal Boundary Drawings, and determined that additional information is needed to confirm that all components within the scope of license renewal were properly identified.

Issue:

Unit 1 drawing LR-LAS-M-97-1 shows 10 CFR 54.4(a)(1) piping whose scope changes to 10 CFR 54.4(a)(2) while the piping classification changes to 'Class C' indicating ASME Section III–Class 3 piping at the following locations:

LR-LAS-M-97, Sheet-1, Location	Piping ID
Location E-7	Line 1RT01C 4 downstream of valve 1G33-F004
Location F-4	Line 1RT06B 4 downstream of valve 1G33-F040

Similarly for Unit 2, drawing LR-LAS-M-143, Sheet-1, shows 10 CFR 54.4(a)(1) piping whose scope changed to 10 CFR 54.4(a)(2) while the piping classification changes to 'Class C' indicating ASME Section III–Class 3 piping at the following locations:

LR-LAS-M-143, Sheet-1, Location	Piping ID
Location E-7	2RT01C 4 downstream of valve 2G33-F004
Location F-4	2RT06B 4 downstream of valve 2G33-F040

Request:

The staff requests that the applicant provide sufficient information to clarify the change in scoping classification.

RAI 3.2.2.2.5-1

Background:

Standard Review Plan for License Renewal (SPR-LR) Section 3.2.2.2.5 addresses loss of material due to general corrosion and fouling that leads to corrosion for steel drywell and suppression pool spray system nozzles exposed to uncontrolled indoor air. The further evaluation discussed in the section states "[t]his aging mechanism and effect [plugging of the spray nozzles and flow orifices] will apply since the spray nozzles and flow orifices are occasionally wetted, even though the majority of the time the system is on standby. The wetting and drying of these components can accelerate corrosion and fouling." The associated Table 1 item (3.2.1-6) states that a plant-specific aging management program is to be evaluated. LRA Section 3.2.2.2.5 states that this further evaluation item is not applicable because the spray system nozzles are stainless steel, not steel. The discussion for this item in the LRA does not mention that the system is occasionally wetted; however, the staff notes that technical specification surveillance requirement 3.6.2.4.2 for the residual heat removal's suppression pool spray subsystem requires periodic verification of a flow rate greater than 450 gallons per minute through the associated spray sparger (identified as "spray header" on drawing LR-LAS-M-96).

The spray nozzles in LRA Table 3.2.2-4, "Residual Heat Removal System," show the internal environment as "condensation" that will be managed for loss of material by the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program. The same table shows carbon steel piping and piping components with internal environments of both "condensation" and "treated water" that will be managed for loss of material by either the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program or the Water Chemistry with One-Time Inspection program, respectively.

Issue:

1. Plugging of the spray nozzles is not precluded simply because they are constructed of a material that is not susceptible to general corrosion in an uncontrolled indoor air environment. The wetting and drying that "can accelerate corrosion and fouling" also applies to steel piping and components upstream of the spray nozzles. It is unclear to the staff how the difference in material for the spray nozzles provides sufficient justification for non-applicability of the further evaluation item, if the steel piping and components upstream of the nozzles are occasionally wetted.
2. The internal environment for the spray header (i.e., piping upstream of the spray nozzles) is either "condensation" or "treated water," and the associated components will be considered as part of a population for either periodic inspections or one-time inspections, depending on the program. It is not clear to the staff which components are considered to have a "condensation" environment, and whether it is applicable to the spray header piping. In addition, the staff notes that a total flow of 450 gallons per minute with 18 spray nozzles on a 4-inch spray header results in flow velocities between 0.6 and 5.7 feet per second, depending on the spray header segment relative to the supply point. It is not clear whether the internal environment of the spray header will be considered unique due to the flow variations throughout the line or whether the internal environment will be grouped with other system components from a sampling perspective.

Request:

1. For the drywell and suppression pool spray system nozzles, provide the bases for not needing a plant-specific aging management program to manage plugging of spray nozzles caused by accelerated corrosion of steel components upstream of the nozzles due to occasional wetting and drying.
2. For the piping upstream of the suppression pool spray nozzles, clarify which environment (condensation or treated water) is being considered and discuss whether the suppression pool spray header will be considered as a unique environment due to the variations in flow, or provide the bases for considering it as part of a larger population from a sampling perspective.

RAI 3.5.1.78-1

Background:

LRA Table 3.5.1, item 3.5.1-78 addresses the spent fuel pool (SFP) liner exposed to treated water, which will be managed for loss of material and cracking due to stress corrosion cracking (SCC). LRA Table 3.5.2-9, associated with item 3.5.1-78, cites generic note B, indicating that the items are consistent with the GALL Report item; however, these items also include components such as stainless steel gates, liner anchors, and integral attachments, in addition to the SFP liner. Based on the discussion in LRA Table 3.5.1, item 3.5.1-78, these additional items will only be managed for loss of material through the Water Chemistry program and by monitoring the SFP water level and leakage from the leak chase channels. LRA Table 3.5.2-9 does not address cracking for stainless steel components exposed to treated water that are associated with item 3.5.1-78.

The staff recognizes that treated water less than 140 °F is not an environment that is conducive to SCC. However, although the Updated Final Safety Analysis Report (UFSAR) Section 9.1.3.2.1.1 states that normal operating and refueling temperatures in the SFP are at or below 140 °F, during an “emergency” full core offload, the UFSAR states that the SFP water temperature remains below boiling (212 °F). In addition, SFP temperature limits maintain bulk water temperature less than 140 °F, but there may be local temperatures that exceed the limitation for susceptibility to cracking.

Issue:

It is unclear to the staff if appropriate activities to verify the effectiveness of the Water Chemistry program are being performed for the components in LRA Table 3.5.2-9 that reference item 3.5.1-78. It is also unclear to the staff why the aging effect of cracking is not being managed for stainless steel components that reference item 3.5.1-78, since temperatures in the SFP can exceed 140 °F.

Request:

1. State the basis for why the aging effect of cracking is not being managed for items that reference 3.5.1-78. Include information regarding past SFP temperatures and discuss whether local temperatures need to be considered.

2. If it is determined that cracking needs to be managed, provide clarification on how the effectiveness of the Water Chemistry program is being verified for items that reference item 3.5.1-78 in LRA Table 3.5.2-9 since some of the components cannot be monitored via leakage through the leak chase channels.

RAI 3.5.2.2.1.5-1

Background:

Section 54.21(a)(3) of 10 CFR requires applicants to demonstrate that the effects of aging will be adequately managed so that intended functions will be maintained consistent with the current licensing basis for each structure and component subject to aging management review. Section 54.2(c)(1) of 10 CFR requires the evaluation of time-limited aging analyses (TLAA) to demonstrate that: (i) the analyses remain valid for the period of extended operation, (ii) the analyses have been projected to the end of the period of extended operation; or (iii) the effects of aging on the intended function will be adequately managed for the period of extended operation.

LRA Section 3.5.2.2.1.5 "Cumulative Fatigue Damage," corresponding to LRA Table 3.5.1, item 3.5.1-9, states in part that the evaluation of fatigue as a TLAA for the LaSalle County Station, Units 1 and 2, primary containment liner is addressed in LRA Section 4.6. In LRA Section 4.6.1, the applicant provides the TLAA evaluation of the primary containment liner plate and penetrations. The applicant dispositioned this TLAA in accordance with 10 CFR 54.21(c)(1)(iii), and stated that the effects of aging on the intended functions of components analyzed in accordance with ASME Section III, Class 1 requirements will be managed by the Fatigue Monitoring program through the period of extended operation.

LRA Table 3.5.2-7 AMR results line items corresponding to LRA Table 3.5.1, item 3.5.1-9, address electrical penetration assemblies, mechanical penetration assemblies, penetration sleeves, refueling bellows assembly, and downcomers components which will be managed for the cumulative fatigue damage aging effect by the TLAA program. However, LRA Table 3.5.2-7 does not identify any AMR results line items corresponding to Table 3.5.1, item 3.5.1-9, for the primary containment liner.

Issue:

The staff is not clear why the LRA Table 3.5.2-7 AMR results line items corresponding to Table 1, item 3.5.1-9, do not address the containment liner component(s), and how this component is being adequately managed for the cumulative fatigue damage aging effect for the period of extended operation.

Request:

Describe how the primary containment liner is adequately managed for the cumulative fatigue damage aging effect through the period of extended operation, and provide the technical basis for not addressing the containment liner component(s) in LRA Table 3.5.2-7 AMR results line items corresponding to Table 1, item 3.5.1-9.

RAI 4.2.5-1

Background:

LRA Section 4.2.5 addresses a TLAA on reactor vessel axial weld failure probability assessment. Specifically, LRA Tables 4.2.5-1 and 4.2.5-2 provide comparison of axial weld failure probability parameters between the applicant's assessment and the staff's safety assessment in the safety evaluation (July 28, 1998) of the BWRVIP-05 report. The comparison of parameters includes initial RT_{NDT} (nil-ductility transition reference temperature) and mean RT_{NDT}. The LRA indicates that Unit 1 has a Combustion Engineering (CE) reactor vessel and Unit 2 has a Chicago Bridge and Iron (CB&I) reactor vessel. The applicant dispositioned this TLAA in accordance with 10 CFR 54.21(c)(1)(ii) by projecting the axial weld failure probability assessments through the period of extended operation.

The NRC staff's safety evaluation for the methodology in BWRVIP-05 was supplemented in a safety evaluation to the BWRVIP dated March 7, 2000. In the supplemental evaluation, the staff updated the reactor vessel failure probability and mean RT_{NDT} analyses for axial welds in reactor vessels designed by CE and by CB&I.

Issue:

The staff noted that LRA Section 4.2.5 does not provide a comparison of axial weld failure probability parameters between the applicant's assessment and the staff's March 7, 2000, supplemental safety evaluation regarding the BWRVIP-05 Report. Specifically, Table 3 of the supplemental safety evaluation addresses the axial weld failure frequencies determined in the staff's assessment. The LRA does not discuss these failure frequencies in comparison with the applicant's assessment results.

In addition, the applicant did not provide a probabilistic analysis establishing that the reactor vessel failure frequency for axial welds is less than 5×10^{-6} per reactor year in accordance with the staff's March 7, 2000, supplemental safety evaluation.

Request:

1. Justify why LRA Section 4.2.5 does not need to be revised to provide comparison of axial weld failure probability parameters between the applicant's assessment and the staff's supplemental safety evaluation dated March 7, 2000.
2. If the applicant's failure probability comparison does not indicate that the reactor vessel failure frequency for axial welds is less than 5×10^{-6} per reactor year, provide the following information:
    a. a plant-specific probabilistic analysis for axial weld failure, consistent with SRP-LR Section 4.2.3.1.5, or
    b. information demonstrating that loss of fracture toughness due to neutron irradiation embrittlement of axial welds does not affect the structural integrity of the reactor vessel for the period of extended operation.