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10 CFR 50
10 CFR 51
10 CFR 54

RS-15-180

July 15, 2015

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

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: Response to NRC Requests for Additional Information, Set 4, dated June 19, 2015 related to the LaSalle County Station, Units 1 and 2, License Renewal Application (TAC Nos. MF5347 and MF5346)

References:

1. Letter from Michael P. Gallagher, Exelon Generation Company LLC (Exelon), to NRC Document Control Desk, dated December 9, 2014, "Application for Renewed Operating Licenses"

2. Letter from Jeffrey S. Mitchell, US NRC to Michael P. Gallagher, Exelon, dated June 19, 2015, "Requests for Additional Information for the Review of the LaSalle County Station, Units 1 and 2 License Renewal Application – Set 4 (TAC Nos. MF5347 and MF5346)"

In Reference 1, Exelon Generation Company, LLC (Exelon) submitted the License Renewal Application (LRA) for the LaSalle County Station (LSCS), Units 1 and 2. In Reference 2, the NRC requested additional information to support staff review of the LRA.

Enclosure A contains the responses to this request for additional information.

Enclosure B contains updates to sections of the LRA (except for the License Renewal Commitment List) affected by the responses.

Enclosure C provides an update to the License Renewal Commitment List (LRA Appendix A, Section A.5). There are no other new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Mr. John Hufnagel, Licensing Lead, LaSalle License Renewal Project, at 610-765-5829.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 07-15-2015

Respectfully,

Michael P. Gallagher
Vice President - License Renewal Projects
Exelon Generation Company, LLC

Enclosures: A: Responses to Set 4 Requests for Additional Information
B: LSCS License Renewal Application Updates
C: LSCS License Renewal Commitment List Updates

cc: Regional Administrator – NRC Region III
NRC Project Manager (Safety Review), NRR-DLR
NRC Project Manager (Environmental Review), NRR-DLR
NRC Project Manager, NRR-DORL- LaSalle County Station
NRC Senior Resident Inspector, LaSalle County Station
Illinois Emergency Management Agency - Division of Nuclear Safety

Enclosure A

**Responses to Set 4 Requests for Additional Information
Related to Various Sections of the
LaSalle County Station (LSCS) License Renewal Application (LRA)**

RAI B.2.1.29-1
RAI B.2.1.29-2
RAI B.2.1.31-1
RAI B.2.1.33-1
RAI B.2.1.34-1
RAI B.2.1.34-2
RAI B.2.1.35-1
RAI B.3.1.2-1

RAI B.2.1.29-1

Background:

Title 10 of the Code of Federal Regulations (10 CFR) Section 54.21(a)(3), requires the applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis (CLB) for the period of extended operation (PEO). As described in the Standard Review Plan for License Renewal (SRP-LR), an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the Generic Aging Lessons Learned (GALL) Report when evaluation of the matter in the GALL Report applies to the plant.

License renewal application (LRA) Section B.2.1.29 states that the ASME Section XI, Subsection IWE aging management program (AMP) with enhancements will be consistent with the ten elements of the GALL Report AMP XI.S1, "ASME Section XI, Subsection IWE," specified in NUREG-1801. The Detection of Aging Effects program element recommends that the program be augmented to require surface examination, in addition to visual examination, to detect cracking in stainless steel penetration sleeves, dissimilar metal welds, bellows; and steel components that are subject to cyclic loading but have no CLB fatigue analysis. This program element also states that, where feasible, Appendix J tests (GALL Report AMP XI.S4) may be performed in lieu of surface examination. This AMP recommendation is also related to GALL Report line item II.B4.CP-38, associated with SRP LR Table 3.5-1, item 10, which recommends further evaluation specifically of the adequacy of the detection of aging effects with regard to stress corrosion cracking of stainless steel and dissimilar metal welds of penetration sleeves and penetration bellows.

During the license renewal AMP audit, the staff noted that the Detection of Aging Effects program element in the LRA AMP basis document (LA-PBD-AMP-XI.S1, Revision 1, Section 3.4) states that the “primary containment penetration sleeves are carbon steel and stainless steel IWE pressure boundary surfaces including containment sleeves and associated welds are subject to Appendix J tests which are performed in addition to visual IWE examinations.”

Issue:

It is not clear to the staff that the Detection of Aging Effects program element is consistent with the GALL Report because the LRA AMP basis document does not state that supplemental surface examinations will be performed, in addition to visual examinations, to detect cracking in stainless steel penetration sleeves, or dissimilar metal welds. Further, if the option to perform Appendix J tests in lieu of surface examinations will be used for any of the mentioned components, the basis document does not mention the type of Appendix J test that would be performed for the specific components in order for the Nuclear Regulatory Commission (NRC) staff to evaluate the appropriateness of the test to detect cracking in these components.

Request:

1. State whether the supplemental surface examinations recommended in GALL Report AMP XI.S1 will be performed to detect cracking in stainless steel and dissimilar metal welds of penetration sleeves. If supplemental surface examination will be performed, indicate what standard will be used to perform surface examination of these stainless steel and dissimilar metal welds.

2. If an Appendix J test is used in lieu of supplemental surface examinations, indicate the type of Appendix J test that will be used for the applicable components and justify its appropriateness to detect cracking prior to loss of intended function.

3. If supplemental examinations will not be performed, or supplemental examination methods other than those described in GALL Report AMP XI.S1 will be used, describe and justify the exception to GALL Report AMP XI.S1.

Exelon Response:

1. GALL Report AMP XI.S1, Element 4 states that surface exams are required, in addition to visual exams, "to detect cracking in stainless steel penetration sleeves, dissimilar metal welds, bellows, and steel components that are subject to cyclic loading but have no current licensing basis fatigue analysis. Where feasible, Appendix J tests (AMP XI.S4) may be performed in lieu of the surface examination." As discussed in LRA Table 3.5.1 items 3.5.1-9 and 3.5.1-27 and in subsections 3.5.2.2.1.5 and 4.6.1 cracking due to cyclic loading is not managed by the ASME Section XI, Subsection IWE (B.2.1.29) program or the 10 CFR Part 50, Appendix J (B.2.1.32) program, since at LSCS the Primary Containment penetration sleeve components subject to cyclic loading have a current licensing basis fatigue analysis with a TLAA fatigue evaluation. No containment penetration bellows or vent line bellows exist at LSCS.

   The RAI Background text mentions a GALL Report recommendation associated with line item II.B4.CP-38, and with SRP LR Table 3.5-1, item 3.5.1-10 for the evaluation of stainless steel and dissimilar metal welds of penetration sleeves and penetration bellows for detection of stress corrosion cracking. This line item was not used in the LSCS LRA and is justified as not applicable in LRA Table 3.5.1 item 3.5.1-10 and section 3.5.2.2.1.6 due to the lack of a corrosive environment and other parameters necessary for stress corrosion cracking (SCC). LSCS UFSAR section 1.2.2.4.2 states that the Reactor Building completely surrounds the Primary Containment. The Reactor Building, therefore, shelters and protects the Primary Containment and associated penetration sleeves from a corrosive environment. Based on the operating experience reviews performed for LRA development, industry operating experience reviews documented in NUREG 1801 Rev. 2 Section XI.S1, NRC Information Notice 92-20, NUREG/CR-6726, and NUREG 1950, Table IV-13, Comments 899 and 902; LSCS and industry OE has not identified cracking due to cyclic loads or SCC as an applicable aging effect for dissimilar metal welds or stainless steel containment penetration sleeves. Most of the external surface of the stainless steel penetrations are embedded in the four foot thick suppression pool concrete wall; the remainder of the external surface is subject to the air-indoor uncontrolled environment.

   The current LSCS ISI ASME Section XI, Subsection IWE program complies with ASME Section XI, Subsection IWE, 2001 Edition with the 2003 Addenda, supplemented with the applicable requirements of 10 CFR 50.55a.

   Supplemental surface examinations of stainless steel and dissimilar metal welds of LSCS penetration sleeves and closures are: 1) not necessary because the required parameters for SCC are not present at LSCS, 2) not recommended in GALL Report

AMP XI.S1 for LSCS penetration sleeve components subject to cyclic loading which have a current licensing basis fatigue analysis, and 3) are not possible for the major portion of such LSCS components due to the fact that stainless steel penetrations are embedded in the four foot thick suppression pool concrete wall. Therefore, supplemental surface examinations of LSCS stainless steel and dissimilar metal welds of penetration sleeves will not be performed.

2. Surface examination of the LSCS subject penetration sleeve components subject to cyclic loading which have a current licensing basis fatigue analysis is not recommended or required by GALL Report AMP XI.S1. Therefore, 10 CFR 50 Appendix J testing need not be considered in lieu of a surface examination. LSCS does utilize a combination of IWE visual examinations and 10 CFR 50 Appendix J testing for examination of containment penetration sleeves, welds, flued heads and closure plates as recommended in GALL AMP XI.S4. UFSAR figures 3.8-18, 3.8-19, and 3.8-20 depict typical containment piping penetration sleeve configurations with a flued head or closure plate on one end which are open between the pipe and the penetration sleeve on one end of the sleeve. These penetrations are subjected to 10 CFR 50 Appendix J, type A testing. 10 CFR 50 Appendix J, type B tests are not required and not possible for the LSCS mechanical penetration sleeves which are open between the pipe and the penetration sleeve on one end.

3. As discussed in LRA Table 3.5.1 items 3.5.1-9 and 3.5.1-27 and in subsections 3.5.2.2.1.5 and 4.6.1, LSCS Primary Containment penetration sleeve components subject to cyclic loading have a current licensing basis fatigue analysis with a TLAA fatigue evaluation and as a result, do not require surface examination in accordance with GALL Report AMP XI.S1. In addition, no containment penetration bellows or vent line bellows exist at LSCS. Therefore, an exception to GALL Report AMP XI.S1 relative to surface examination of such penetration components is not required.

RAI B.2.1.29-2

Background:

Section 54.21(a)(3) of 10 CFR requires applicants to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the PEO. As described in the SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant. LRA Section B.2.1.29 states that the ASME Section XI, Subsection IWE AMP with enhancements will be consistent with the ten elements of GALL Report AMP XI.S1, "ASME Section XI, Subsection IWE," specified in NUREG-1801.

The Operating Experience section of LRA AMP B.2.1.29, "ASME Section XI, Subsection IWE," discusses leakage from the reactor cavity pool drain line welds at the interface with the cavity pool liner which has been observed as seepage through the surrounding concrete. The LRA AMP provides an enhancement to the Monitoring and Trending program element to perform periodic ultrasonic thickness (UT) measurements of the containment liner in the vicinity of the leakage while the leakage persists. As stated in the SRP-LR, the staff reviewed the applicant's programs for consistency with those described in the GALL Report and with plant-specific operating experience during the performance of an AMP audit.

Issue:

During the license renewal AMP audit, the NRC staff reviewed an action request (AR) report (LaSalle AR Report 02447966) from the Unit 2, 2015 refueling outage. The report identified indications of reactor cavity leakage in a different location from where it has been historically identified.

Request:

Explain, with sufficient technical detail, how the existing LRA AMP B.2.1.29 with the associated enhancement, is adequate to address the impact of the new operating experience on the potential for loss of material due to corrosion of the containment liner, or propose a new/revised enhancement to address the operating experience. Explain whether the proposed UT location is adequate to address the newly identified leakage location, or if additional UT locations will be necessary.

Exelon Response:

As discussed in the Background section above, the leakage described in the Operating Experience section of LRA Section B.2.1.29 was observed at the interface between the reactor cavity pool liner (floor plate) and the reactor cavity drain line welds, which are at approximately elevation 814 feet. The new operating experience identifies additional leakage on concrete surrounding the Unit 2 reactor cavity pool above floor elevation 820 feet 6 inches, at approximately elevation 823 feet, which is about nine feet above the previously identified leakage source and above the Primary Containment drywell liner. This newly observed leakage is farther away from the drywell liner; as it is on the outside face of the concrete surrounding the reactor cavity pool liner at column lines corresponding to the 180 degree azimuth radial location which is the same location as the 180 degree azimuth radial location specified in the existing

enhancement for the ultrasonic examination of the drywell liner. The purpose of the inspections specified in Enhancement 2 of LRA AMP B.2.1.29 is to confirm that corrosion is not occurring.

LSCS is a Mark II concrete containment. The outside face of the drywell liner is not susceptible to corrosion due to contact with low impurity concrete pore water because the Mark II concrete primary containment design does not include an air gap between the drywell liner and concrete. The carbon steel drywell liner served as formwork for the concrete containment wall, such that the concrete was placed directly against the carbon steel liner during construction. Drywell liner corrosion is not expected in the oxygen starved environment on the outside face of the liner which is in contact with the inside face of the six foot thick drywell concrete. In addition, the alkalinity of the drywell concrete, concrete pore water, and any seepage though the concrete would have a protective or passivating effect on the carbon steel liner and reinforcing steel of the concrete protecting those components from corrosion. The water filling the reactor cavity pool is treated water, and is not borated. Leakage from the reactor cavity pool is possible only during refueling outages every two years when the reactor cavity is filled with water, and therefore the moisture is not constantly refreshed. Based on industry operating experience, as documented in NRC sponsored report, “Sandia Report SAND2010-8718 Nuclear Containment Steel Liner Corrosion Workshop: Final Summary and Recommendation Report,” corrosion starting from the concrete side of the liner and corroding through to the interior surface of the liner, due to water leakage through the concrete, has not been observed. Industry operating experience and plant specific information and operating experience support a conclusion that corrosion will not occur on the concrete side of the drywell liner as a result of water infiltrating the concrete. Therefore, corrosion of the outside or concrete side of the liner is not expected.

In addition, as part of the ASME Section XI, Subsection IWE program a total of over 200 confirmatory UT inspections performed near the 0 degrees and 180 degrees azimuths below 813 foot elevation in 1999, 2005, and 2015 confirm that liner loss of material due to corrosion has not occurred. As part of the ASME Section XI, Subsection IWL program, inspections of the surrounding concrete have been performed in the areas where leakage was observed, and no recordable indications of concrete or reinforcing steel degradation were identified.

Finally, the elevation specified in the enhancement for performance of the ultrasonic thickness (UT) measurements is appropriate since at elevation 813 feet, and below, the carbon steel drywell liner is 0.25 inch thick. The carbon steel ring girder (above) to which the drywell head is attached is much thicker at 1.5 inches, and the thickness of the plate floor liner of the reactor cavity to which the reactor cavity drain lines are welded is a minimum of 2.5 inches. This makes the 0.25 inch thick carbon steel drywell liner at and below the 813 foot elevation the limiting thickness location for detecting loss of material due to corrosion of the containment liner.

Therefore, since 1) the newly observed leakage is at the same azimuth as the previously identified leakage, 2) the Mark II concrete containment design is not conducive to liner outside face corrosion, 3) industry operating experience supports a conclusion that corrosion will not occur on the concrete side of the liner, 4) the liner area at and below the 813 foot elevation contains the limiting thickness, and 5) monitoring activities described in the LRA will confirm that liner degradation due to corrosion has not and are not occurring, additional UT locations are not necessary.

RAI B.2.1.31-1

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 CLB during the PEO. As described in the SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant.

LRA Section B.2.1.31 states that the ASME Section XI, Subsection IWF program is an existing AMP with enhancements that will be consistent with the program elements in GALL Report AMP XI.S3, "ASME Section XI, Subsection IWF." The Preventive Action program element of the LRA AMP provides an enhancement (Enhancement 1; LR Commitment No. 31, item 1) in order to become consistent with the corresponding GALL Report program element. This enhancement states in part that, prior to the PEO, the program will be enhanced to:

> Provide guidance for proper specification of bolting material, storage, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. Requirements for high strength bolts shall include the preventive actions for storage, lubricants and stress corrosion cracking potential discussed in Section 2 of RCSC (Research Council on Structural Connections) publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts.

The Preventive Action program element in the GALL Report AMP XI.S3 also includes a recommendation for using bolting material that has an actual measured yield strength less than 150 ksi or 1,034 MPa, intended as a preventive measure against the potential for stress corrosion cracking (SCC). During the audit, the staff noted that Section 3.2, "Preventive Actions," in the LRA program basis document (LA-PBD-XI.S3, Revision 4) states that high strength bolting (actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa) in sizes greater than 1 inch nominal diameter are not used in LaSalle County Station, Units 1 and 2 IWF supports. The staff also noted that, on the basis of the previous statement, the Detection of Aging Effects program element in Section 3.4 of the applicant's program basis document does not include the supplemental volumetric examination recommended in the Detection of Aging Effects program element of the GALL Report AMP to detect cracking due to SCC. This supplemental volumetric examination recommendation is specifically for high strength bolting (actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa) in sizes greater than 1 inch nominal diameter.

Issue:

It is not clear if Enhancement 1 (LR Commitment No. 31, item 1) is consistent with the Preventive Action program element of the GALL Report AMP XI.S3, with regard to the recommendation related to the use of bolting material that has an actual measured yield strength less than 150 ksi or 1,034 MPa. Specifically, since the enhancement does not prevent future use of high strength bolting material (actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa) in sizes greater than 1 inch nominal diameter, that are susceptible to SCC, and the LRA AMP has no provisions for recommended supplemental volumetric

examination of such bolting, this aspect of the Preventive Action program element of the LRA AMP appears to be not consistent with the GALL Report AMP.

Request:

1. Clarify how Enhancement 1 (LR Commitment No. 31, item 1) to the Preventive Action program element of the LRA AMP B.2.1.31, "ASME Section XI, Subsection IWF," is consistent with the corresponding program element recommendation of the GALL Report AMP XI.S3, specifically with regard to the future use of high strength bolting (actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa) in sizes greater than 1 inch nominal diameter for IWF supports, considering that such bolting is susceptible to SCC and the LRA AMP has no provisions for recommended supplemental volumetric examination to detect cracking if used in the future.
2. If criteria other than that described in the GALL Report are being used, provide the basis to justify the adequacy of the proposed exception to manage aging effects on high strength bolting (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch nominal diameter for IWF supports.

Exelon Response

1. Consistent with GALL Report AMP XI.S3, Element 2 "Preventive Action," the enhancement for bolting associated with IWF supports is revised as shown below to preclude the potential for future use of high strength bolts due to consideration of stress corrosion cracking vulnerability:

   Provide guidance for proper specification of bolting material, storage, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. Requirements for high strength bolts shall include the preventive actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC (Research Council on Structural Connections) publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Lubricants that contain molybdenum disulfide (MoS_2) shall not be applied to high strength bolts within the scope of license renewal. ***Bolting material with actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa, in sizes greater than 1 inch nominal diameter shall not be used in supports for ASME Class 1, 2, and 3 piping and components or supports for MC components.***

2. The above revision to the enhancement is consistent with the GALL Report AMP "ASME Section XI, Subsection IWF" program, XI.S3, Element 2 "Preventive Action;" therefore, no exception to GALL is required.

LRA Appendix A, Section A.2.1.31, and Appendix B, Section B.2.1.31 are revised as shown in Enclosure B. LRA Appendix A, Section A.5, Commitment 31 is also revised as shown in Enclosure C.

RAI B.2.1.33-1

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 CLB during the PEO. As described in the SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant.

LRA Section B.2.1.33 states that the Masonry Walls program is an existing AMP with enhancements that will be consistent with the program elements in the GALL Report AMP XI.S5, "Masonry Walls." The LRA AMP includes an enhancement (Enhancement 1; LR Commitment No. 33, item 1) applicable to the Parameters Monitored or Inspected, and Acceptance Criteria program elements in order to become consistent with the corresponding GALL Report program elements. This enhancement states that, prior to the PEO, the program will be revised to "provide guidance for inspection of masonry walls for separation and gaps between the supports for masonry walls." The Parameters Monitored or Inspected program element of the GALL Report AMP XI.S5 states that "[t]he primary parameters monitored are potential shrinkage and/or separation and cracking of masonry walls and gaps between the supports and masonry walls that could impact the intended function or potentially invalidate its evaluation basis."

Issue:

It is not clear that Enhancement 1 (LR Commitment No. 33, item 1), applicable to the Parameters Monitored or Inspected, and Acceptance Criteria program elements of LRA AMP B.2.1.33, is adequate to establish consistency with the GALL Report AMP with regard to monitoring for gaps between supports and masonry walls. In this regard, the critical parameters intended to be monitored, as provided in the GALL Report AMP, are gaps between the masonry walls and component supports (i.e., supports for safety-related systems or components that are located in close proximity to or have attachments to the walls, or edge supports that establish boundary conditions used in the design analysis of the walls) to ensure that intended function and/or evaluation basis of the masonry wall is not adversely impacted. This is different from the parameter described as "gaps between the supports for masonry walls" in the LRA AMP enhancement.

Request:

1. Clarify how the enhancement for the Parameters Monitored or Inspected, and Acceptance Criteria program elements of LRA AMP B.2.1.33 is consistent with the parameters and criteria described in the GALL Report AMP XI.S5 with regard to monitoring for gaps between supports and masonry walls.
2. If parameters or criteria other than that described in the GALL Report are being used, provide the basis to justify the adequacy of the proposed exception to manage the aging effects to masonry walls.

Exelon Response:

1. The Masonry Walls aging management program, Commitment 33, Enhancement 1 is revised to be consistent with the GALL Report AMP, Masonry Walls program XI.S5, Element 3 “Parameters Monitored/Inspected” and Element 6 "Acceptance Criteria" as follows:

   Provide guidance for inspection of masonry walls for separation and gaps between the supports ~~for~~***and*** masonry walls.

2. The above revision is consistent with the GALL Report AMP, “Masonry Walls” program, XI.S5, Element 3 “Parameters Monitored and Inspected” and Element 6 “Acceptance Criteria;” therefore, no exception to GALL is required.

LRA Appendix A, Section A.2.1.33, and Appendix B, Section B.2.1.33 are revised as shown in Enclosure B. LRA Section A.5, Commitment 33, Enhancement 1 is revised as shown in Enclosure C.

RAI B.2.1.34-1

Background:

Section 54.21(a)(3) of 10 CFR requires applicants to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the PEO. As described in SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant.

LRA Section B.2.1.34 states that the Structures Monitoring program, with enhancements, will be consistent with the ten program elements of GALL Report AMP XI.S6, "Structures Monitoring."

The Detection of Aging Effects program element of GALL Report AMP XI.S6 recommends the following for inaccessible below-grade structural elements of plants with non-aggressive groundwater/soil environment:

a) evaluating the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and

b) examining representative samples of the exposed portions of the below grade concrete, when excavated for any reason.

During the license renewal AMP audit, the staff noted that the Detection of Aging Effects program element in the LRA AMP basis document (LA-PBD-AMP-XI.S6, Revision 3, Section 3.4e) states:

> The existing Structures Monitoring and excavation procedures will be enhanced to require monitoring of buried concrete by (a) evaluation of the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and (b) examination of representative samples of the exposed portions of the below grade concrete, when excavated for any reason.

However, the enhancement in LRA Section B.2.1.34 (Enhancement 7; LR Commitment No. 34, item 7) only addresses item (b) of the GALL Report recommendations stated above.

Issue:

It is not clear to the staff that the LRA contains adequate enhancements for the Detection of Aging Effects program element to address consistency with both recommendations, (a) and (b), from the GALL Report AMP XI.S6 as noted above.

Request:

1. Clarify how the enhancement for the Detection of Aging Effects program element is consistent with that described in the GALL Report AMP XI.S6 for managing aging effects in inaccessible areas exposed to non-aggressive ground water/soil environment.

2. If criteria other than that described in the GALL Report are being used, provide the basis to justify the adequacy of the proposed exception to manage the aging effects in inaccessible areas.

Exelon Response:

1. The Structures Monitoring aging management program, Commitment 34, Enhancement 7 is revised to include the requirement that an evaluation needs to be performed for the inaccessible concrete surfaces when accessible concrete surfaces show signs of aging degradation, as follows:

   Evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and ~~For in scope structures,~~ examine representative samples of the exposed portions of the below grade concrete**,** when excavated for any reason.

2. The above revision is consistent with the GALL "Structures Monitoring" program, XI.S6, Element 4 "Detection of Aging Effects" criteria; therefore, no exception to GALL is required.

LRA Appendix A, Section A.2.1.34, and Appendix B, Section B.2.1.34 are revised as shown in Enclosure B to reflect this change. LRA Appendix A, Section A.5, Commitment 34 is also revised as shown in Enclosure C to reflect this change.

RAI B.2.1.34-2

Background:

Section 54.21(a)(3) of 10 CFR requires applicants to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the PEO. As described in SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant.

Enhancement 1 (LR Commitment No. 34, item 1) of the LRA Structures Monitoring AMP (LRA Section B.2.1.34) adds the plant-specific component type "permanent drywell shielding" to the scope of the Structures Monitoring program. The aging management review (AMR) results line item in LRA Table 3.5.2-7 (LRA page 3.5-160) associated with generic note J and plant-specific note 3, indicates that this component includes the material "fiberglass," lists the aging effect requiring management as "change in material properties" in an air-indoor uncontrolled environment, and credits the Structures Monitoring program for aging management. LRA Table 3.5.2-7, note 3, associated with this line item, notes that the "fiberglass blanket covers [of the permanent drywell shielding] will be inspected by the Structures Monitoring program for rips and tears." Further, generic Note J states that "neither the component nor the material and environment combination is evaluated in NUREG-1801."

The staff notes that the GALL Report AMP XI.S6 does not include fiberglass blanket covers of shielding components as part of the scope of the program and does not include "rips and tears" in the Parameters Monitored or Inspected program element, nor does it include associated acceptance criteria in the Acceptance Criteria program element.

Issue:

It is not clear to the staff how the LRA Structures Monitoring program will be adequate to manage aging effects without providing enhancement(s) to the applicable program elements to include relevant parameters to be monitored or inspected, detection of aging effects, and the associated acceptance criteria, as applicable, for the plant-specific component "fiberglass blanket covers for permanent drywell shielding" for which the AMP is credited. Further, there is an inconsistency in the aging effect being managed between the associated LRA Table 3.5.2-7 AMR results line item and the corresponding plant-specific note 3 ("change in material properties" versus "rips and tears").

Request:

1. Explain how the enhancement to the Scope of Program program element that adds a plant-specific component type "permanent drywell shielding" is adequate to manage aging effects without providing corresponding enhancement(s) to the applicable program elements to include relevant parameters to be monitored or inspected, detection of aging effects, and the associated acceptance criteria, as applicable, for the plant-specific component. Otherwise, provide the necessary enhancement to the program elements of the Structures Monitoring program to adequately manage the applicable aging effects for the plant-specific component/material/environment/aging effect combination described above.

2. Describe the aging effect(s) and aging mechanism that will be managed by the AMP for the permanent drywell shielding fiberglass blanket covers and clarify the inconsistency between the aging effect described in LRA Table 3.5.2-7 AMR results line item (LRA page 3.5-160) and the corresponding plant-specific note 3 ("change in material properties" versus "rips and tears").

Exelon Response:

1. To ensure that the fiberglass blanket covers associated with permanent drywell shielding are properly managed during the period of extended operation, the Structures Monitoring program is enhanced to inspect for rips and tears of these fiberglass blanket covers. Enhancement 10 associated with Commitment 34, is added as follows:

   Inspect the fiberglass outer covering for the permanent drywell shielding for signs of rips and tears. If a rip or tear is found, repair or replace the permanent drywell shielding.

2. The fiberglass cover of the "Metal Components (Permanent Drywell Shielding)" is identified in LRA Table 3.5.2-7. The aging effect, change in material properties, due to irradiation and thermal exposure, was selected to align with an appropriate GALL aging effect and result in aging management under the Structures Monitoring program. Further, a plant specific note 3 in LRA Table 3.5.2-7 identified that rips and tears associated with the fiberglass blanket will be managed by the Structures Monitoring program (B.2.1.34). Therefore, the plant specific note further defines that "rips and tears" is the type of change in material properties that is associated with fiberglass blankets, to be managed by AMP B.2.1.34. Finally, GALL Program Elements 3 (Parameters Monitored/Inspected), 4 (Detection of Aging Effects), and 6 (Acceptance Criteria) are addressed by new Enhancement 10 to the Structures Monitoring program.

LRA Appendix A, Section A.2.1.34, and Appendix B, Section B.2.1.34 are revised as shown in Enclosure B to reflect this change. LRA Appendix A, Section A.5, Commitment 34 is also revised as shown in Enclosure C to reflect this change.

RAI B.2.1.35-1

Background:

Section 54.21(a)(3) of 10 CFR requires applicants to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the PEO. As described in the SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report when evaluation of the matter in the GALL Report applies to the plant.

LRA Section B.2.1.35 states that the RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants program will be consistent with the aging management program specified in the GALL Report AMP XI.S7, "RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants." The Scope of Program program element of GALL Report AMP XI.S7 states that the water-control structures included in the NRC Regulatory Guide (RG) 1.127 program are concrete structures, structural steel and structural bolting, among other structures, associated with emergency cooling water systems or flood protection of nuclear power plants.

During the license renewal AMP audit, the staff noted that the Scope of Program program element in the LRA AMP basis document (LA-PBD-AMP XI.S7, Revision 3) included enhancement 1 (LR Commitment No. 35, item 1) which states that the existing program and procedures will be enhanced to include, among others, the "shad net anchors" to the scope of the existing RG 1.127 program. During the audit, the staff noted that the concrete structure (concrete piers), to which the anchors for the shad net are attached, is within the scope of license renewal; however, this concrete structure did not appear to be included as part of the LRA enhancement to the Scope of Program program element. During the license renewal AMP audit, the applicant clarified that the "shad net anchors" component referenced in the LRA includes both the steel elements of the anchors and the concrete pier structures.

Issue:

It is unclear to the staff whether the different materials/components associated with the "shad net anchors" are within the scope of the RG 1.127 program. The staff is concerned that the RG 1.127 program might not adequately manage the aging effects of in-scope components associated with water-control structures if the different materials/components from the "shad net anchors" structure are not clearly described in the LRA AMP Scope of Program program element. The staff notes that different materials/components (i.e. the steel anchors elements and the concrete piers) have different aging effects that require different parameters to be monitored or inspected for aging management to ensure that their intended function(s) is maintained for the PEO.

Request:

Clarify how the enhancement for the Scope of Program program element is consistent with that described in the GALL Report AMP XI.S7 for including the water-control structures associated with the RG 1.127 program (e.g. concrete pier and anchors from the shad net anchors) to ensure that the aging effects of in-scope components are being adequately managed. Include a description of all the different materials/components associated with the "shad net anchors" that are within the scope of the RG 1.127 program. Also, describe any differences in the parameters

to be monitored or inspected between the different materials (e.g., steel, concrete) or components associated with the “shad net anchors.” Also, provide applicable conforming updates to the LRA and/or Updated Final Safety Analysis Report (UFSAR) supplement, as appropriate, based on the clarification.

Exelon Response:

The shad net anchors are short concrete anchor walls that are located at the Cooling Lake and are used to secure the shad net across the Cooling Lake intake flume. The wall extends below grade securing and maintaining the wall stationary for structural support of the attached shad net. These reinforced concrete walls are identified as a "shad net anchors" on LaSalle station documentation and therefore the same nomenclature was used in the LRA. There is also a galvanized steel concrete embedment which is part of the concrete shad net anchors that is used as an attachment point to secure the shad net. The concrete shad net anchors are found in LRA Table 3.5.2-3, page 3.5-105 as component type “Concrete: Shad Net Anchors.” The galvanized steel concrete embedments are also found in LRA Table 3.5.2-3, page 3.5-103 as component type “Concrete Embedments.” The concrete shad net anchors are in scope and will be managed by the RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants (B.2.1.35) and the Structures Monitoring (B.2.1.34) programs. The galvanized steel concrete embedments are in-scope for license renewal and will be managed by the Structures Monitoring programs. Enhancement 1 to LRA Commitment 35 will ensure monitoring and inspection of the different materials because the galvanized steel “concrete embedments” are covered under item 1.c of the enhancement, and the “concrete shad net anchors” are addressed under item 1.d of the enhancement.

No updates to the LRA are required as a result of this response.

RAI B.3.1.2-1

Background:

An evaluation of time limited aging analyses (TLAA), pursuant to 10 CFR 54.21(c)(1)(iii), requires an applicant to demonstrate that the effects of aging on the intended function(s) will be adequately managed for the PEO. As described in Section 4.5.3.1.3 of the SRP-LR, an applicant may demonstrate adequate management of aging effects on concrete containment tendon prestress, under 10 CFR 54.21(c)(1)(iii), by referencing the GALL Report AMP X.S1, "Concrete Containment Tendon Prestress," when evaluation of the matter in the GALL Report AMP applies to the plant.

The Acceptance Criteria program element of the GALL Report AMP X.S1 states, in part, "[t]he goal is to keep the trend line above the PLL [predicted lower limit] because, as a result of any inspection performed in accordance with ASME Section XI, Subsection IWL, if the trend line crosses the PLL, the existing prestress in the containment tendon could go below the MRV [minimum required value] soon after the inspection and would not meet the requirements…." This statement in the Acceptance Criteria program element of the GALL Report AMP is intended to address acceptance criteria for the case where the updated trend line crosses the PLL line.

The "Concrete Containment Tendon Prestress" AMP described in LRA Sections B.3.1.2 and A.3.1.2 includes an enhancement (Enhancement 1, LR Commitment No. 44) applicable to the Monitoring and Trending program element that will be implemented prior to the PEO to establish consistency with the GALL Report AMP X.S1. This enhancement states:

> For each surveillance interval, trending lines will be updated ["projected" in LRA Section A.3.1.2] through the period of extended operation as part of the regression analysis and compared to the predicted lower limit and minimum required values for each tendon group. Program element Affected: Monitoring and Trending (Element 5).

During the audit, the staff noted that the program element description in Section 3.6, "Acceptance Criteria," of the applicant's program basis document (LA-PBD-AMP-X.S1, Revision 1) states, in part:

> The trend line regression analysis for each tendon group is updated after each surveillance inspection to reflect newly acquired data from each tendon within its respective group, consistent with NRC Information Notice 99-10. If the trend line for any tendon group falls below the respective PLL line, then the cause should be determined, evaluated, and corrected.

The staff also noted that the second statement cited above was also included in Section 3.7, "Corrective Actions," of the program basis document. These statements appear to indicate that Enhancement 1 (LR Commitment No. 44) is applied and implemented in the Acceptance Criteria program element of the LRA AMP to address the case where the trend line goes below the PLL, when the comparison of the two lines is made as committed to by the enhancement. However, Section 3.6 of the program basis document indicated that the LRA AMP program element was consistent with that of the GALL Report AMP without any enhancement.

Issue:

The Acceptance Criteria program element of GALL Report AMP includes a provision intended to address the case where the trend line goes below the PLL when the comparison of the two lines is made. It is not clear if the program enhancement (LR Commitment No. 44), that commits to comparison of the trend line and the PLL, will also be applicable to and implemented in the Acceptance Criteria program element of the LRA AMP because:

- the LRA AMP and the program basis document state that Enhancement 1 to the LRA AMP is applicable only to the Monitoring and Trending program element, and
- statements exist in the description of the Acceptance Criteria program element of the LRA program basis document that appear to address the case when the trend line goes below the PLL; however the program element description also states that there is no enhancement to the program element.

The staff needs additional information to determine if the Acceptance Criteria program element of the LRA AMP is consistent with the GALL Report AMP.

Request:

Clarify, with the basis, whether the enhancement (Enhancement 1, LR Commitment No. 44) in LRA Section B.3.1.2, intended to establish consistency with the GALL Report AMP X.S1 and described in the LRA AMP as applicable only to the Monitoring and Trending program element, will also be applicable to and implemented in the Acceptance Criteria program element in order to become consistent with the Acceptance Criteria program element of the GALL Report AMP. Also, provide applicable conforming updates to the LRA and/or UFSAR supplement, as appropriate, based on the response.

Exelon Response:

The enhancement described in Commitment 44 is intended to establish consistency with the GALL Report AMP X.S1. LRA Section B.3.1.2 is revised to indicate that the enhancement is applied and implemented both in Element 5, Monitoring and Trending, and in Element 6, Acceptance Criteria, to address the case where the trend line goes below the PLL or MRV. The enhanced Element 5 requires the comparison of the trend line to the PLL and MRV, which are the acceptance criteria implemented in the enhanced Element 6. Also, Section 3.6 of the AMP Program Basis Document will be revised to indicate that the above discussed enhancement is required. Therefore, the enhanced program is consistent with the GALL Report AMP X.S1.

In addition, the enhancement wording is revised in LRA Appendix A, Section A.3.1.2 for consistency with LRA Appendix B, Section B.3.1.2 and LRA Appendix A, Section A.5, Commitment 44 as shown below:

> For each surveillance interval, trending lines will be ~~projected~~***updated*** through the period of extended operation as part of the regression analysis and compared to the predicted lower limit and minimum required values for each tendon group.

LRA Appendix A, Section A.3.1.2, and Appendix B, Section B.3.1.2 are revised as shown in Enclosure B to reflect these changes.

Enclosure B

LSCS License Renewal Application Updates
Resulting from the Response to the following RAIs:

RAI B.2.1.31-1
RAI B.2.1.33-1
RAI B.2.1.34-1
RAI B.2.1.34-2
RAI B.3.1.2-1

Notes:

- Updated LRA Information is provided in the same order as the RAI responses contained in Enclosure A.

- To facilitate understanding, portions of the original LRA have been repeated in this Enclosure, with revisions indicated. Previously submitted information is shown in normal font. Changes are highlighted with ***bolded italics*** for inserted text and ~~strikethroughs~~ for deleted text.

As a result of the response to RAI B.2.1.31-1 provided in Enclosure A of this letter, LRA Appendix A, Section A.2.1.31, on page A-33 of the LRA is revised as shown below:

A.2.1.31 ASME Section XI, Subsection IWF

The ASME Section XI, Subsection IWF aging management program is an existing condition monitoring program that consists of periodic visual examinations of ASME Class 1, 2, 3, and MC piping and component supports and high-strength structural bolting for signs of degradation (such as loss of material, loss of mechanical function, and loss of preload), evaluation, and corrective actions. The program is implemented through corporate and station procedures, in accordance with the requirements of the ASME Code, Section XI, Subsection IWF, as approved in 10 CFR 50.55a. The monitoring methods are effective in detecting the applicable aging effects and the frequency of monitoring is adequate to prevent significant degradation.

The ASME Section XI, Subsection IWF aging management program will be enhanced to:

1. Provide guidance for proper specification of bolting material, storage, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. Requirements for high strength bolts shall include the preventive actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC (Research Council on Structural Connections) publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Lubricants that contain molybdenum disulfide (MoS_2) shall not be applied to high strength bolts within the scope of license renewal. ***Bolting material with actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa, in sizes greater than 1 inch nominal diameter shall not be used in supports for ASME Class 1, 2, and 3 piping and components or supports for MC components.***

2. Provide guidance, regarding the selection of supports to be inspected on subsequent inspections, when a support is repaired in accordance with the corrective action program. The enhanced guidance will ensure that the supports inspected on subsequent inspections are representative of the general population.

These enhancements will be implemented prior to the period of extended operation.

As a result of the response to RAI B.2.1.31-1 provided in Enclosure A of this letter, the Enhancements subsection of LRA Appendix B, Section B.2.1.31, on page B-137 of the LRA is revised to update Enhancement 1, as shown below:

B.2.1.31 ASME Section XI, Subsection IWF

Enhancements

Prior to the period of extended operation, the following enhancements will be implemented in the following program elements:

1. Provide guidance for proper specification of bolting material, storage, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. Requirements for high strength bolts shall include the preventive actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC (Research Council on Structural Connections) publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Lubricants that contain molybdenum disulfide (MoS_2) shall not be applied to high strength bolts within the scope of license renewal. ***Bolting material with actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa, in sizes greater than 1 inch nominal diameter shall not be used in supports for ASME Class 1, 2, and 3 piping and components or supports for MC components.*** **Program Element Affected: Preventive Actions (Element 2)**

As a result of the response to RAI 2.1.33-1 provided in Enclosure A of this letter, LRA Appendix A, Section A.2.1.33 on page A-34 of the LRA, is revised as shown below:

A.2.1.33 Masonry Walls

The Masonry Walls aging management program is an existing condition monitoring program that is implemented as part of the Structures Monitoring (A.2.1.34) program. Masonry wall condition monitoring is based on guidance provided in IE Bulletin 80-11, "Masonry Wall Design," and NRC Information Notice 87-67, "Lessons Learned from Regional Inspections of Licensee Actions in Response to IE Bulletin 80-11," and is implemented through station procedures.

The Masonry Walls program manages the effects of loss of material and cracking of concrete masonry walls, and will inspect for separation, along with gaps between the supports and masonry walls. The program relies on periodic visual inspections on an interval not to exceed five years to monitor and maintain the condition of masonry walls within the scope of license renewal. Masonry walls that are considered fire barriers are also managed by the Fire Protection (A.2.1.16) program.

The Masonry Walls aging management program will be enhanced to:

1. Provide guidance for inspection of masonry walls for separation and gaps between the supports ~~for~~***and*** masonry walls.

2. Require that personnel performing inspections and evaluations meet the qualifications described in ACI 349.3R.

These enhancements will be implemented prior to the period of extended operation.

As a result of the response to RAI B.2.1.33-1 provided in Enclosure A of this letter, Enhancement 1 of LRA Appendix B, Section B.2.1.33 on page B-142 of the LRA, is revised as shown below:

B.2.1.33 Masonry Walls

Enhancements

Prior to the period of extended operation, the following enhancements will be implemented in the following program elements:

1. Provide guidance for inspection of masonry walls for separation and gaps between the supports ~~for~~***and*** masonry walls. **Program Elements Affected: Parameters Monitored/Inspected (Element 3), Acceptance Criteria (Element 6)**

As a result of the responses to RAI B.2.1.34-1 and RAI B.2.1.34-2 provided in Enclosure A of this letter, LRA Appendix A, Section A.2.1.34 on page A-36 of the LRA is updated to revise Enhancement 7 and add Enhancement 10, as shown below:

A.2.1.34 Structures Monitoring

The Structures Monitoring aging management program will be enhanced to:

7. ***Evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and*** ~~For in scope structures,~~ examine representative samples of the exposed portions of the below grade concrete***,*** when excavated for any reason.

10. Inspect the fiberglass outer covering for the permanent drywell shielding for signs of rips and tears. If a rip or tear is found, repair or replace the permanent drywell shielding.

These enhancements will be implemented prior to the period of extended operation.

As a result of the responses to RAI B.2.1.34-1 and RAI B.2.1.34-2 provided in Enclosure A of this letter, the Structures Monitoring aging management program Section B.2.1.34 of Appendix B on page B-147 of the LRA, are revised as shown below:

B.2.1.34 Structures Monitoring

Enhancements

Prior to the period of extended operation, the following enhancements will be implemented in the following program elements:

7. ***Evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and*** ~~For in scope structures,~~ examine representative samples of the exposed portions of the below grade concrete, when excavated for any reason. **Program Element Affected: Detection of Aging Effects (Element 4)**

10. Inspect the fiberglass outer covering for the permanent drywell shielding for signs of rips and tears. If a rip or tear is found, repair or replace the permanent drywell shielding. Program Element Affected: Parameters Monitored/Inspected (Element 3), Detection of Aging Effects (Element 4), and Acceptance Criteria (Element 6)

As a result of the response to RAI B.3.1.2-1 provided in Enclosure A of this letter, LRA Appendix A, Section A.3.1.2, on LRA page A-45 is revised as shown below:

A.3.1.2 Concrete Containment Tendon Prestress

The Concrete Containment Tendon Prestress aging management program is an existing condition monitoring program that is part of the containment inservice inspection program that is based on ASME Section XI, Subsection IWL criteria, as supplemented by the requirements of 10 CFR 50.55a(b)(2)(viii). The program monitors and manages the loss of tendon prestress in the concrete containment prestressing system for the period of extended operation. The prestressing tendons are used to impart compressive forces in the prestressed concrete containments to resist the internal pressure inside the containment that would be generated in the event of a LOCA. The prestressing forces generated by the tendons diminish over time due to losses in prestressing forces in the tendons and in the surrounding concrete. The regression and predicted lower limit analyses have been extrapolated through the end of the period of extended operation and the trend lines for each tendon group (vertical or horizontal (hoop) tendon types) have been shown to remain above the predicted lower limit and minimum required values for each tendon group. The program ensures that, during each inspection, the trend lines of the measured prestressing forces show that they meet the requirements of 10 CFR 50.55a(b)(2)(viii)(B). Measured forces and trend lines are compared to predicted lower limits, and minimum required values and corrective actions are taken if unacceptable results or trends are identified. The program also incorporates related plant-specific and industry operating experience.

The Concrete Containment Tendon Prestress aging management program will be enhanced as follows:

1. For each surveillance interval, trending lines will be ~~projected~~***updated*** through the period of extended operation as part of the regression analysis and compared to the predicted lower limit and minimum required values for each tendon group.

This enhancement will be implemented prior to the period of extended operation.

As a result of the response to RAI B.3.1.2-1 provided in Enclosure A of this letter, Enhancement 1 of LRA Appendix B, Section B.3.1.2, on LRA page B-187 is revised as shown below:

Enhancements

Prior to the period of extended operation, the following enhancement will be implemented in the following program elements:

1. For each surveillance interval, trending lines will be updated through the period of extended operation as part of the regression analysis and compared to the predicted lower limit and minimum required values for each tendon group. **Program Elements Affected: Monitoring and Trending (Element 5)*, Acceptance Criteria (Element 6)***

Enclosure C

LSCS License Renewal Commitment List Updates

This Enclosure identifies commitments made in this document and is an update to the LSCS LRA Appendix A, Section A.5 License Renewal Commitment List. Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.

Changes to the LSCS LRA Appendix A, Section A.5 License Renewal Commitment List are as a result of the Exelon response to the following RAIs:

RAI B.2.1.31-1
RAI B.2.1.33-1
RAI B.2.1.34-1
RAI B.2.1.34-2

Notes:

- New or updated commitments are shown in the same order as the related RAI responses contained in Enclosure A.

- To facilitate understanding, relevant portions of the previously submitted License Renewal Commitment List have been repeated in this Enclosure, with revisions indicated. Previously submitted information is shown in normal font. Changes due to this submittal are highlighted with ***bolded italics*** for inserted text and ~~strikethroughs~~ for deleted text.

As a result of the response to RAI B.2.1.31-1 provided in Enclosure A of this letter, LRA Appendix A, Section A.5, Commitment 31, shown on page A-74 of the LRA is revised as shown below:

A.5 License Renewal Commitment List

NO.	PROGRAM OR TOPIC	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE
31	ASME Section XI, Subsection IWF	ASME Section XI, Subsection IWF is an existing program that will be enhanced to: *1.* Provide guidance for proper specification of bolting material, storage, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. Requirements for high strength bolts shall include the preventive actions for storage, lubricants, and stress corrosion cracking potential discussed in Section 2 of RCSC (Research Council on Structural Connections) publication "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Lubricants that contain molybdenum disulfide (MoS_2) shall not be applied to high strength bolts within the scope of license renewal. ***Bolting material with actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa, in sizes greater than 1 inch nominal diameter shall not be used in supports for ASME Class 1, 2, and 3 piping and components or supports for MC components.*** 2. Provide guidance, regarding the selection of supports to be inspected on subsequent inspections, when a support is repaired in accordance with the corrective action program. The enhanced guidance will ensure that the supports inspected on subsequent inspections are representative of the general population.	Program to be enhanced prior to the period of extended operation.	Section A.2.1.31 ***Exelon Letter RS-15-180 7/15/2015***

As a result of the response to RAI B.2.1.33-1 provided in Enclosure A of this letter, LRA Appendix A, Section A.5, Commitment 33, on page A-74 of the LRA is revised as shown below:

A.5 License Renewal Commitment List

NO.	PROGRAM OR TOPIC	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE
33	Masonry Walls	Masonry Walls is an existing program that will be enhanced to: 1. Provide guidance for inspection of masonry walls for separation and gaps between the supports ~~for~~***and*** masonry walls. 2. Require that personnel performing inspections and evaluations meet the qualifications described in ACI 349.3R.	Program to be enhanced prior to the period of extended operation.	Section A.2.1.33 ***Exelon Letter RS-15-180 07/15/2015***

As a result of the response to RAI B.2.1.34-1 and RAI B.2.1.34-2 provided in Enclosure A of this letter, LRA Appendix A, Section A.5, Commitment 34, beginning on page A-75 of the LRA is revised as shown below:

A.5 License Renewal Commitment List

NO.	PROGRAM OR TOPIC	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE
34	Structures Monitoring	Structures Monitoring is an existing program that will be enhanced to: 1. Add the following components and commodities: a. Pipe, electrical, and equipment component support members b. Pipe whip restraints and jet impingement shields c. Panels, racks, cabinets, and other enclosures d. Sliding surfaces e. Sumps f. Electrical cable trays and conduits g. Electrical duct banks h. Tube tracks i. Transmission tower (including takeoff towers) and foundation (including cycled condensate storage tank foundations) j. Penetration seals and sleeves k. Blowout panels l. Permanent drywell shielding m. Transformer foundation n. Bearing pads o. Compressible joints p. Hatches, plugs, handholes, and manholes q. Metal components (decking, vent stack, and miscellaneous steel) r. Building features – doors and seals, bird screens, louvers, windows, and siding s. Concrete curbs, and anchors 2. Provide guidance for proper specification of bolting material, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. 3. Revise storage requirements for high strength bolts to include recommendations of Research Council on Structural Connections (RCSC)	Program to be enhanced prior to the period of extended operation.	Section A.2.1.34 ***Exelon Letter RS-15-180 07/15/2015***

		Specification for Structural Joints Using High Strength Bolts, Section 2.0. 4. Require acceptance and evaluation of structural concrete using quantitative criteria based on Chapter 5 of ACI 349.3R. 5. Monitor raw water and ground water chemistry on a frequency not to exceed five years for pH, chlorides, and sulfates and verify that it remains non-aggressive, or evaluate results exceeding criteria to assess impact, if any, on below-grade concrete. 6. Monitor concrete for increase in porosity and permeability, inspection of accessible sliding surfaces for indication of significant loss of material due to wear or corrosion, debris, or dirt. 7. ***Evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas, and*** ~~For in scope structures,~~ examine representative samples of the exposed portions of the below grade concrete***,*** when excavated for any reason. 8. Require that personnel performing inspections and evaluations meet the qualifications specified within ACI 349.3R with respect to knowledge of inservice inspection of concrete and visual acuity requirements. 9. Clarify that loose bolts and nuts and cracked high strength bolts are not acceptable unless accepted by engineering evaluations. ***10. Inspect the fiberglass outer covering for the permanent drywell shielding for signs of rips and tears. If a rip or tear is found, repair or replace the permanent drywell shielding.***		