

U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION, DIVISION OF LICENSE RENEWAL

Docket Nos: 50-373 and 50-374

License Nos: NPF-11 and NPF-18

Licensee: Exelon Generation Co., LLC

Facility: LaSalle County Station, Units 1 and 2

Location: Marseilles, IL

Dates: March 30 – April 3, 2015
April 13 – April 17, 2015

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Introduction

The U.S. Nuclear Regulatory Commission (NRC or the staff) conducted a 10-day audit at the LaSalle County Station, Units 1 and 2 (LSCS), nuclear power plant in Marseilles, IL, from March 30 to April 17, 2015. The purpose of the audit was to examine Exelon Generation Company, LLC's (Exelon or the applicant), aging management programs (AMPs) and related documentation to verify the applicant's claims of consistency with the corresponding AMPs in NUREG-1801, "Generic Aging Lessons Learned (GALL) Report—Final Report," Revision 2, issued December 2010. As described in the GALL Report, the staff based its evaluation of the adequacy of each AMP on its review of the following 10 program elements in each AMP: (1) "scope of program"; (2) "preventive actions"; (3) "parameters monitored or inspected"; (4) "detection of aging effects"; (5) "monitoring and trending"; (6) "acceptance criteria"; (7) "corrective actions"; (8) "confirmation process"; (9) "administrative controls"; and (10) "operating experience."

Exceptions to the GALL Report AMP elements will be evaluated separately as part of the staff's review of the LSCS license renewal application (LRA) and documented in the staff's safety evaluation report (SER).

NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR)," Revision 2, issued December 2010, provides staff guidance for reviewing an LRA. The SRP-LR allows an applicant to reference in its LRA the AMPs described in the GALL Report. By referencing the GALL Report AMPs, the applicant concludes that its AMPs correspond to those AMPs reviewed and approved in the GALL Report and that no further staff review is required. If an applicant credits an AMP for being consistent with a GALL Report program, it is incumbent on the applicant to ensure that the plant program contains all of the elements of the referenced GALL Report program. The applicant's determination should be documented in an auditable form and maintained on site.

During the audit, the staff audited AMP elements 1 through 6 and 10 ("scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "operating experience"). These elements of the applicant's AMPs were claimed to be consistent with the GALL Report and were audited against the related elements of the associated AMP described in the GALL Report, unless otherwise indicated in this audit report. Elements 7 through 9 ("corrective actions," "confirmation process," and "administrative controls") were audited during the scoping and screening methodology audit conducted March 9, 2015, to March 13, 2015, and are evaluated separately. The staff audited all AMPs that the applicant stated were consistent with the GALL Report AMPs.

During the audit, if the applicant took credit for a program in the GALL Report, the staff verified that the plant program contained all of the elements of the referenced GALL Report program. In addition, the staff verified that the conditions at the plant were bounded by the conditions for which the GALL Report program was evaluated.

In performing the audit, the staff examined the applicant's LRA, program basis documents, and related references; interviewed various applicant representatives; and conducted walkdowns of several plant areas. In total, 45 AMPs were reviewed and 36 breakout (discussion) sessions with applicant representatives were conducted. This report documents the staff's activities during the audit.

LRA AMP B.2.1.1, ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD

Summary of Information in the Application. The LRA states that AMP B.2.1.1, “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M1, “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cracking,” “leak,” “wear,” “loss of material,” “failure,” “degradation,” “damage,” “repair,” and “weld.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBS-AMP-XI.M1	Program Basis Document, “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD”	Revision 1 08/15/2014
2. LAS03.G03	ISI Program Plan Third 10-Year Inspection Interval	Revision 2 08/10/2012
3. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
4. ER-AA-330-001	ASME Section XI Pressure Testing	Revision 12
5. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	Revision 11
6. ER-AA-330-009	ASME Section XI Repair/Replacement Program	Revision 8
7. ER-AA-330-1002	LaSalle Inservice Inspection (ISI) Program Health Report	Revision 7
8. AR00229950	Action Request, “Post Qualification Required for Temper-Bead Welding”	06/20/2004
9. AR00300094	Action Request, “L2R10 – NDE of ISI Component Exhibits Surface Indications”	02/10/2005
10. AR00865730	Action Request, “ISI Welds Not Examined in Accordance with ISI Program”	01/12/2009
11. AR01623353	Action Request, “ISI Exams of N2E and N2F Scope Deleted”	02/19/2014
12. AR01651884	Action Request, “IEMA Questions on 2B33-F067B Boroscope Inspection”	02/25/2014
13. AR02123909	Action Request, “ISI Database Not Updated with Outage Scope Deletions”	09/09/2014

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by

known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the updated final safety analysis report (UFSAR) supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M1.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.2, Water Chemistry

Summary of Information in the Application. The LRA states that AMP B.2.1.2, “Water Chemistry,” is an existing program with an exception that is consistent with the program elements in GALL Report AMP XI.M2, “Water Chemistry.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the exception associated with this AMP, which will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “water chemistry,” “foul,” and “treated water.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M2	Program Basis Document	Revision 2
2. AR00130672	Reactor Coolant Chloride Concentration Exceeded the EPRI Action Level 1 Limits	11/2002
3. AR00257405	U2 Stator Cooling Water Chemistry Goal Exceeded	09/23/2004
4. AR01651623	Chemistry Dose over Sac Projection	04/25/2014
5. AR01498293	U-1 HD Tank Dissolved O ₂ Indication Erratic	04/06/2013
6. AR00200922	MC Tank Chemistry Results above Limits per CY-AB-120-200	02/11/2004
7. AR01493260	Chemistry Review of Raw Water Performance FASA Deficiency	03/27/2013
8. AR00706378	CP Outlet Header High Dissolved Oxygen	12/03/2007
9. AR01191677	C RT Conductivity High	03/24/2011
10. AR00784886	Unit 1 Feedwater Iron below Goal	06/10/2008

Document	Title	Revision / Date
11. AR01346266	Unit 2 Feedwater Dissolved Oxygen Below 30 PPB	03/27/2012
12. CY-AB-120-120	BWR Startup Chemistry	Revision 9
13. CY-AB-120-130	BWR Shutdown Chemistry	Revision 10
14. CY-AB-120-200	Storage Tanks Chemistry	Revision 9
15. CY-AB-120-300	Spent Fuel Pool	Revision 12
16. CY-AB-120-310	Suppression Pool/Torus Chemistry	Revision 7
17. CY-AB-120-320	Control Rod Drive Water Chemistry	Revision 6
18. AR01666956	HWC Performance for Unit 2 Availability for May 2014 Not Met	06/02/2014
19. AR01616738	HWC Performance for Unit 1 Availability for January 2014 Not Met	02/04/2014
20. AR01616747	HWC Performance for Unit 2 Availability for January 2014 Not Met	02/04/2014
21. AR01657505	HWC Performance for Unit 1 Availability for January 2014 Not Met	05/08/2014

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed exception.

During the audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. The staff also verified that aspects of the “scope of program” program element not associated with the exception are consistent with the corresponding program elements in the GALL Report AMP. The staff’s evaluation of aspects of this program element associated with the exception will be addressed in the SER.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M2. The staff also verified that for the “scope of program” program element, the aspects of the LRA AMP program element not associated with the exception are consistent with the corresponding program element in GALL Report AMP XI.M2. The staff’s evaluation of aspects of the program element associated with the exception will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.3, Reactor Head Closure Stud Bolting

Summary of Information in the Application. The LRA states that AMP B.2.1.3, “Reactor Head Closure Stud Bolting,” is an existing program with exceptions that is consistent with the program elements in GALL Report AMP X.M3, “Reactor Head Closure Stud Bolting.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the exceptions associated with this AMP. The exceptions will be evaluated and documented in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “bolt,” “bolting,” “closure stud,” “stress corrosion cracking,” “wear,” “cracking,” and “stuck.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PDB-AMP-X.M3	Program Basis Document – Reactor Head Closure Stud Bolting	Revision 2
2. ER-0113-8720-R1	Reactor Pressure Vessel Washer Indications, LaSalle 1, GE Hitachi Nuclear Energy	Revision 1 02/2010
3. DRF 137-0010 GE-NE-523-93-0991	Fracture Mechanics Based Structural Margin Evaluation for Commonwealth Edison BWR Reactor Pressure Vessel Head Studs	09/1991
4. LAS03.G03	LaSalle County Nuclear Power Station, Units 1 & 2, ISI Program Plan, Third 10-Year Inspection Interval, LAS03.G03	Revision 2 08/10/2012
5. AR01673158	Possible Bushing(s) Installed in the RPV Flange(s)	06/19/2014
6. AR01651159	RPV Head Stud UFSAR Inconsistency and Typos	04/24/2014
7. ISI-05-07-2004	Post-Outage 90-Day Inservice Inspection Reports	05/07/2004
8. ISI-06-01-2007	Post-Outage 90-Day Inservice Inspection Reports	06/01/2007
9. ISI-05-28-2008	Post-Outage 90-Day Inservice Inspection Reports	05/28/2008
10. ISI-05-08-2009	Post-Outage 90-Day Inservice Inspection Reports	05/08/2009
11. ISI-06-03-2011	Post-Outage 90-Day Inservice Inspection Reports	06/03/2011
12. ISI-06-05-2012	Post-Outage 90-Day Inservice Inspection Reports	06/05/2012

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed exceptions. During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by

known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description to be consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that “scope of program,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M3. The staff also verified that for the “preventive actions” program element, the aspects of the LRA AMP program element not associated with the exception are consistent with the corresponding program element in GALL Report AMP XI.M3. The staff’s evaluation of aspects of the program element associated with the exception will be addressed and documented in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.4, BWR Vessel ID Attachment Welds

Summary of Information in the Application. The LRA states that AMP B.2.1.4, “BWR Vessel ID Attachment Welds,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M4, “BWR Vessel ID Attachment Welds.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cracking,” “wear,” “hold down,” “core spray,” “attachment welds,” “steam dryer,” and “jet pump.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M4	Program Basis Document, “BWR Vessel ID Attachment Welds”	Revision 0 03/25/2014
2. ER-AB-331	BWR Internals Program Management	Revision 14
3. ER-AB-331-1001	Boiling Water Reactor (BWR) Internals Program	Revision 8
4. EPRI1009948	BWRVIP-48-A, “BWR Vessel and Internals Project, Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines”	06/2004
5. EPRI105696	BWRVIP-03, “BWR Vessel and Internals Project”	Revision 12
6. LS-AA-126-1001	LaSalle Reactor Vessel and Internal and Internals Program Pre-BWRVIP/INPO Focused Area Self-Assessment	Revision 7

Document	Title	Revision / Date
7. EC346971	LaSalle 1 Dryer Indications, "Disposition of Steam Dryer and Steam Dryer Support"	Revision 0 02/04/2004
8. EC369368	Evaluation of Minor IVVI Indications Observed during L1R12	02/22/2008
9. AR00162050	Action Request, "Inspection of Reactor Internals Varies from BWRVIP Guidance"	06/05/2003
10. AR00167816	Action Request, "Unit 1 Shroud Support Gusset Inspection Deviation from BWRVIP"	07/16/2003
11. AR00734170	Action Request, "Surveillance Sample Holder at 120° Disengaged; INR 08-29"	02/10/2008
12. AR00735887	Action Request, "LP Core Spray Piping Bracket Indication; INR 08-05"	02/13/2008
13. AR00871301	Action Request, "New Welds Identified on Core Spray Piping: CNR 09-02"	01/24/2009
14. AR01331736	Action Request, "INR IVVI 12-38; Metal Sliver Remains on Dryer Support Lug"	02/24/2012
15. AR01477597	Action Request, "Additional Minor Wear on FW Sparger End Bracket Pins"	02/20/2013
16. AR01622580	Action Request, "RM-INR IVVI-14-13 Metal Sliver Remains on Top of Dryer Lug"	02/18/2014
17. AR01699331	Action Request, "INPO BWRVIP Assessment Actions"	09/03/2014

During the audit of program elements one through six, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M4.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.5, BWR Feedwater Nozzle

Summary of Information in the Application. The LRA states that AMP B.2.1.5, “BWR Feedwater Nozzle,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M5, “BWR Feedwater Nozzle.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “feedwater nozzle,” “crack,” and “fatigue.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M5	Program Basis Document GALL Program XI.M5 – BWR Feedwater Nozzle	Revision 0 02/11/2014
2. ISI Database Documents	ISI Program Database Sheets for N4 Nozzle components	
3. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	05/06/2002
4. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	05/21/2003
5. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	06/03/2011
6. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	06/05/2012
7. NA	Final Report, LSCS 3rd Interval, 2nd period – Outage L1R14 Final Report by GEH Nuclear Energy	02/01/2012
8. GEH-RPT-7480-268H 6X-HA2-ISI	Final Report, LSCS Outage L2R13 ISI Final Report by GEH Nuclear Energy	02/01/2012
9. NA	Email from Andrew Kochis to James Jordan, RE: License Renewal Question – Feedwater Nozzle Program	12/17/2013
10. ER-AA-330-1002	3rd Quarter 2014 ISI Program Health	Revision 6 2014
11. LAS03.G03	LaSalle ISI Program Plan for the 3rd ISI Inspection Interval	Revision 2 08/10/2012
12 .Module 077	LSCS Operations Training Program, Feedwater System, Module 077	Revision 13 05/07/2012
13. ER-AA-330-009	ASME Section XI Repair/Replacement Program	Revision 7
14. L-002822	LaSalle 1 Feedwater Nozzle NUREG-0619 Evaluation	Revision 0 06/05/2002
15. L-002823	LaSalle 2 Feedwater Nozzle NUREG-0619 Evaluation	Revision 0 06/05/2002
16. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
17. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	Revision 11
18. CR-26	Relief Request: CR-26	Revision 00

Document	Title	Revision / Date
19. CR-26 SER	Safety Evaluation by the Office of Nuclear Reactor Regulation on the Second 10-year Interval Inservice Inspection Request for Relief CR-26	11/21/2009
20. GE Hitachi Letter	LaSalle Unit-2 Nozzle to Shell Weld LCS 2-N4D Ultrasonic Data	04/03/2015

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

During the audit, the staff made the following observations regarding the “operating experience” program of the BWR Feedwater Nozzle AMP:

- After reviewing the inspection results, the staff noted that earlier inspections had less coverage area than 100 percent. The staff asked why less than 100-percent inspection coverage was acceptable. In response, the applicant stated that it issued Relief Request No. CR-26 to allow for reduced inspection coverage. After reviewing CR-26 and the staff’s corresponding evaluation, the staff finds this response acceptable because the staff previously evaluated and accepted the relief request to allow less than 100-percent inspection coverage.
- After reviewing the inspection results, the staff noted that the Unit 2 nozzles inspection from 2002 showed 10 indications with 78-percent coverage, and later inspections achieved much higher coverage with fewer indications. The staff found the basis for this change in coverage area unclear, and it asked the applicant to provide further information on the inspections to clarify this issue. In response, the applicant provided a letter dated April 3, 2015, from General Electric Hitachi Nuclear Energy (GE Hitachi). The letter states that, after the 2002 inspections, the applicant applied Code Case N-613-1, “Ultrasonic Examination of Penetration Nozzles in Vessels, Examination Category B-D, Item Nos. B3.10 and B3.90, Reactor Nozzle-to-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c), Section XI, Division 1,” dated August 20, 2002, which reduced the size of the examination volume. A portion of the indications in the earlier inspections were outside of the reduced examination volume used in the latter examinations, and this fully accounts for the discrepancy. The staff approved Code Case N-613-1 referenced in Regulatory Guide (RG) 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” issued August 2014. The staff finds this acceptable because the staff reviewed and accepted the reduced inspection area referenced in the Code Case.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and

trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M5.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.6, BWR Control Rod Drive Return Line Nozzle

Summary of Information in the Application. The LRA states that AMP B.2.1.6, “BWR Control Rod Drive Return Line Nozzle,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M6, “BWR Control Rod Drive Return Line Nozzle.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “control rod drive,” “return line nozzle,” and “cracking.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M6	Program Basis Document – BWR Control Rod Drive Return Line Nozzle	Revision 0 02/11/2014
2. 391N0136	LaSalle Unit 1 N10 Cap and Nozzle Modification Report, Project 391N0136, Performed by General Electric	Fall 1977
3. 391N0136	LaSalle Unit 2 N10 Cap and Nozzle Modification Report, Project 391N0136, Performed by General Electric	Spring 1978
4. Drawing E232938	Nozzle Details	Revision 6
5. LAS03.G03	LaSalle ISA Program for the 3rd ISI Inspection Interval	Revision 2
6. ISI Summary Report	LSCS Units 1 and 2 90-Day Post-Outage ISI Letter	07/09/1999
7. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	05/08/2009
8. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	06/04/2010
9. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	06/05/2012
10. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	05/31/2013
11. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
12. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	Revision 11
13. LS-AA-126-1001	FASA Self-Assessment Report	Revision 6
14. NOSA-LAS-14-08	LaSalle ISI, IST, and Appendix J Audit Report	09/17/2014
15. N/A	Letter M.H. Richter, CECO to NRC, LSCS Units 1 and 2 Request for Additional Information to GL 88-01	06/30/1989

Document	Title	Revision / Date
16. UFSAR	LaSalle County Power Station, Updated Final Safety Analysis Report	Revision 20 04/2014

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the staff made the following observation:

- The staff reviewed the UFSAR to confirm that the applicant implemented the requirements in NUREG-0619, “BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking: Resolution of Generic Technical Activity A-10” Revision 1, issued November 1980, by capping the control rod drive (CRD) return line nozzle and removing the return line. The return line was removed and not rerouted. These modifications occurred before LSCS received an operating license. Because the staff reviewed the CRD system and modifications as part of the initial licensing, a response to Generic Letter (GL) 80-095, “Generic Activity A-10,” dated November 13, 1980, was not required. There are no ongoing maintenance or testing activities from NUREG-0619 that would apply to LSCS. Therefore, under its BWR Control Rod Drive Return Line Nozzle Program, the applicant conducts only periodic examinations to detect the effects of cracking in accordance with American Society of Mechanical Engineers (ASME) Code, Section XI, Table IWB-2500-1.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M6.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.7, BWR Stress Corrosion Cracking

Summary of Information in the Application. The LRA states that AMP B.2.1.7, “BWR Stress Corrosion Cracking,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M7, “BWR Stress Corrosion Cracking.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “SCC,” “IGSCC,” “stress corrosion,” “weld,” and “safe end.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M7	Program Basis Document: BWR Stress Corrosion Cracking	Revision 0 03/31/2014
2. Docketed Letter	Dresden Station Units 2 and 3 Quad Cities Stations Units 1 and 2 LaSalle County Station Units 1 and 2 Response to Generic Letter 88-01 (Docket Nos. 50-237/249, 50-245/265, 50-373/374)	07/29/1988
3. Docketed Letter	LaSalle County Station Units 1 and 2 Request for Additional Information to Generic Letter 88-01 (TAC Nos. 69141 and 69142)	06/30/1989
4. Docketed Letter	Review of Response to Generic Letter 88-01, “NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping,” LaSalle County Station, Units 1 and 2 (TAC Nos. 69141 and 69142)	08/22/1990
5. Docketed Letter	LaSalle County Station Units 1 and 2 Response to NRC Request for Additional Information Concerning the Review of Response to Generic Letter 88-01 (NRC Docket No. 50-373 and 50-374)	11/05/1990
6. Docketed Letter	LaSalle County Station, Units 1 and 2 – Relief Request I3R01, Associated with the Third 10-year Interval for LaSalle County Station, Units 1 and 2 (TAC Nos. MD5457 and MD5458)	04/29/2008
7. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
8. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	Revision 11
9. LAS03.G03	ISI Program Plan Third 10-Year Inspection Interval LaSalle County Station, Units 1 & 2	Revision 2 08/10/2012
10. LAS03.G05	ISI Selection Document Third 10-Year Inspection Interval LaSalle County Station, Units 1 & 2	Revision 1 03/31/2011
11. RA14-018	Post-Outage 90-Day Inservice Inspection (ISI) Summary Report (LaSalle County Station Unit 1)	05/29/2014
12. RA13-023	Post-Outage 90-Day Inservice Inspection (ISI) Summary Report (LaSalle County Station Unit 2)	05/31/2013
13. AR1464425	Category D IGSCC Weld Status	01/18/2013
14. AR1682506	Define IGSCC Exam Bases and Components	07/16/2014
15. AR1682506-04	Assignment Number 4 of AR1682506	02/02/2015

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. For the “detection of aging effects” program element, sufficient information was not available to determine whether it was consistent with the corresponding program elements of the GALL Report AMP. In order to obtain the information

necessary to verify whether this program element is consistent with the corresponding program element of the GALL Report AMP, the staff will consider issuing requests for additional information (RAIs) for the subjects discussed below.

- The LRA indicates that the Risk-Informed Inservice Inspection Program incorporates welds classified as Category A (resistant materials) in accordance with the staff-approved Electric Power Research Institute (EPRI) Topical Report TR-112657, Revision B-A, Final Report, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," issued December 1999. The staff noted that the inspection extent for Category A welds incorporated in the Risk-Informed Inservice Inspection Program may not be consistent with the guidance provided in GL 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," dated January 25, 1988, and BWR Vessel and Internals Project (BWRVIP)-75-A, "BWR Vessel and Internals Project Technical Basis for Revisions to Generic Letter 88-01 Inspection," issued October 2005. Therefore, additional information is necessary to confirm whether the program is adequate to manage cracking caused by intergranular stress corrosion cracking (IGSCC) for Category A welds.
- The applicant's inservice inspection selection document dated March 31, 2011, for the third 10-year interval indicates that the number of Category B welds selected for inspections at Unit 2 is less than the number of Category B welds to be inspected in accordance with BWRVIP-75-A. In addition, the number of Category C welds selected for inspection at Unit 2 is less than the number of Category C welds to be inspected in accordance with BWRVIP-75-A. Therefore, additional information is necessary to confirm the adequacy of the program with GALL Report AMP XI.M7.
- The staff noted that the inservice inspection summary report, dated May 31, 2013, for LSCS Unit 2 indicates that the examination coverage of the BWRVIP-75-A inspections for Category B welds was as low as 50 percent. The staff needs additional information to determine whether the limited examination coverage of the applicant's inspections is adequate to manage cracking due to IGSCC.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M7. The staff also identified certain aspects of the "detection of aging effects" program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.8, BWR Penetrations

Summary of Information in the Application. The LRA states that AMP B.2.1.8, “BWR Penetrations,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M8, “BWR Penetrations.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “crack,” “penetration,” “nozzle,” “stress corrosion,” “CRD,” “RPV,” and “SCC.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M8	Program Basis Document BWR Penetrations	Revision 0 05/01/2015
2. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	05/31/2013
3. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	06/05/2012
4. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	05/28/2008
5. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	06/01/2007
6. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	05/07/2004
7. ISI Summary Report	LSCS Unit 2 Post-Outage 90-Day ISI Letter	05/21/2003
8. ISI Summary Report	LSCS Unit 1 Post-Outage 90-Day ISI Letter	05/06/2002
9. ER-AA-330	Conduct of Inservice Inspection Activities	
10. ER-AA-330-001	Section XI Pressure Testing	
11. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and

trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M8.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.9, BWR Vessel Internals

Summary of Information in the Application. The LRA states that AMP B.2.1.9, “BWR Vessel Internals,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.M9, “BWR Vessel Internals.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “shroud,” “jet pump,” “stress corrosion cracking,” “embrittlement,” “cast,” “steel,” “bolt,” “nickel alloy,” and “top guide.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M9	Program Basis Document – BWR Vessel Internals	Revision 1 12/08/2014
2. Results Book – AMP B.2.1.9	Results Book – BWR Vessel Internals	Revision 0
3. AR465798	Flaws Observed in Core Shroud Examination, March 13, 2006	03/13/2006
4. LAS03.G03	LaSalle County Station ISI Program Plan, 3rd 10-Year Inspection Interval	Revision 3
5. AR1358938	Results from L1R14 Exam of Core Shroud Horizontal Welds	03/06/2012
6. ER-AB-331	BWR Internals Program Management	Revision 14
7. ER-AB-331-1001	Boiling Water Reactor (BWR) Internals Program	Revision 8
8. ER-AB-331-101	Evaluation for Thermal Aging/Neutron Embrittlement of BWR Reactor Internal Components	Revision 3
9. LTS-600-8	Reactor Vessel Internals Inservice Inspection during Refueling	Revision 23 07/15/2013
10. I3R-02	10 CFR 50.55a Relief Request: Use of BWRVIP Guidelines in Lieu of Specific ASME Code Requirements Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(i)	Revision 1
11. AR199081	Flaws in Jet Pump Riser Weld RS-9 on Jet Pump 5/6 and Jet Pump 9/10	02/02/2004

Document	Title	Revision / Date
12. AR1331470	IVVI INR 12-28 Indications on RS-9 of Jet Pump 3/4	02/22/2012

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

In addition, the staff found that, for the “scope of program” program element, the availability of information was not sufficient to determine whether it was consistent with the corresponding program elements of the GALL Report AMP. In order to obtain the information necessary to verify whether this program element is consistent with the corresponding program elements of the GALL Report AMP, the staff will consider issuing RAIs for the subject discussed below.

- The “scope of program” program element of the LRA AMP states that inspections and evaluations of the top guide are performed in accordance with BWRVIP-26-A, “BWR Vessel and Internals Project, BWR Top Guide Inspection and Flaw Evaluation Guidelines,” dated November 3, 2004, and BWRVIP-183, “BWR Vessel and Internals Project, Top Guide Grid Beam Inspection and Flaw Evaluation Guidelines,” dated December 18, 2007. The GALL Report AMP recommends that an AMP use only specific portions of the BWRVIP-183 guidelines that are associated with reinspection scope and frequency for the top guide gridbeams. It is not clear to the staff whether only BWRVIP-26-A will be used as flaw evaluation guidance because the NRC has not endorsed BWRVIP-183 for that purpose.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is not bounded by known industry operating experience. In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing RAIs for the subjects discussed below.

- The LRA does not clearly address whether the applicant’s program resolved the concern about jet pump vibration resulting from slip joint leakage flow instability, pump resonance, or turbulent flow. The LRA does not address assessment of plant-specific operating experience regarding jet pump vibration and loss of material due to wear of jet pump wedges and restrainer brackets at their interfaces. The staff needs additional information to determine whether the program needs to be enhanced with additional AMP activities and inspections based on an adequate assessment of operating experience.
- Core shroud categories are important factors for determining the inspection scope and interval for core shroud welds. However, LRA Section B.2.1.9 and the onsite program basis document do not address the category of the Unit 2 core shroud. In addition, the LRA and program basis document do not provide the applicant’s assessment of operating experience for the Unit 2 core shroud (e.g., crack growth trends during inspection intervals) to demonstrate the adequacy of inspection intervals that the applicant implements in its program.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description to be consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M9. The staff’s evaluation of aspects of the program elements associated with enhancements will be addressed in the SER. The staff also identified certain aspects of “scope of program” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also found that additional information may be required before a determination can be made regarding whether the applicant’s operating experience supports the sufficiency of the LRA AMP. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.10, Flow-Accelerated Corrosion

Summary of Information in the Application. The LRA states that AMP B.2.1.10, “Flow-Accelerated Corrosion,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M17, “Flow-Accelerated Corrosion,” as modified by License Renewal Interim Staff Guidance (LR-ISG)-2012-01, “Wall Thinning Due to Erosion Mechanisms,” which was published in the *Federal Register* on November 22, 2013 (Volume 78 of the *Federal Register*, page 226). To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “fac,” “flow accelerated corrosion,” and “erosi.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M17	Program Basis Document, Flow-Accelerated Corrosion	Revision 0
2. ER-AA-430	Conduct of Flow-Accelerated Corrosion Activities	Revision 007
3. ER-AA-430-1001	Guidelines for Flow-Accelerated Corrosion Activities	Revision 011
4. ER-AA-430-1004	Erosion in Piping and Components Guide	Revision 001
5. N/A	Program Health Report, Flow-Accelerated Corrosion Program	1st Quarter 2012-4th Quarter 2014
6. AR00586951	Minimum Pipe Wall Thickness Concerns with 2DG06A-4"	02/02/2007
7. AR01184537	An MSR has 18" Steam Plume Leak	03/07/2011
8. AR00300975	During FAC Examinations, a T Code Minimum Wall Violation was Noted	02/13/2005

Document	Title	Revision / Date
9. AR00301782	Steam Impingement on 2CB01AA/AB Heat Exchangers	02/15/2005
10. AR00601311	CSCS Strainer 2E12-D300A had Area below Minimum Wall	03/08/2007
11. AR00871317	2CB03AA FWH – UT Results Fail Minimum Wall Requirements	01/23/2009
12. AR01177192	Wear Observed on the 24C FW Htr shell during FAC Inspection	02/18/2011
13. AR01516895	Through Wall Steam Leak on 1RI07B-2" Pipe	05/22/2013
14. AR00733763	Minimum Wall Violation	02/09/2008
15. LER 374 2015-001	HPCS Cooling Water Pump Erosion	02/27/2015
16. LER 374 2013-001	HPCS Leak due to Cavitation	06/17/2013

During the audit of program elements one through six, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. For the “scope of program” and “detection of aging effects,” program elements, the staff will consider issuing an RAI for the subject discussed below.

- During the AMP audit, the applicant stated that, after it submitted the LRA, it had implemented NSAC-202L, Revision 4, for its Flow-Accelerated Corrosion Program. It is unclear to the staff how Revision 4 to NSAC-202L will satisfy the recommendations of the GALL Report AMP XI.M17, as modified by LR-ISG-2012-01, which only addresses implementation of NSAC-202L, Revision 2 or Revision 3.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M17, as modified by LR-ISG-2012-01, with the exception of staff-identified differences between the applicant’s program and GALL Report XI.M17. The staff identified certain aspects of the “scope of program” and “detection of aging effects” program elements of the LRA AMP for which additional information or additional evaluation is required before adequacy can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.11, Bolting Integrity

Summary of Information in the Application. The LRA states that AMP B.2.1.11, “Bolting Integrity,” is an existing program with enhancements that will be consistent with the program

elements in GALL Report AMP XI.M18, "Bolting Integrity." To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant's staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the lake screen house building service and circulating water pumps and auxiliary building diesel generator for Unit 1. The staff also conducted an independent search of the applicant's operating experience database using the keywords: "crack," "bolt," "leak," "torque," "corrosion," "rust," "preload," and "loose."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M18, Revision 2	Program Basis Document GALL Program XI.M18-Bolting Integrity	Revision 2
2. AR00093598 Report	Failure Analysis on 1B33-F060A	03/30/2005
3. Same as Title	Post-Outage 90-Day Inservice Inspection (ISI) Summary Report	05/06/2012
4. AR01032809 Report	Severe Corrosion to Cooling Water Strainer End Cover	12/31/2010
5. AR00838762 Report	Improper Thread Engagement	10/31/2008
6. AR00730632 Report	2B33-F387B Valve Body Missing Bolt	02/02/2008
7. AR01124139 Report	Make Up and Blowdown Butterfly Valve Fasteners Corroded	10/09/2010
8. AR00428643 Report	Bonnet to Body Leak	11/29/2005
9. AR00545274 Report	Minor Leaks Observed on OFP01KB Engine during Run	10/17/2006
10. MA-AA-410	Bolting Integrity Aging Management Program	Revision 0
11. ER-AA-2030	Conduct of Plant Engineering Manual	Revision 14
12. MA-MW-736-600	Torqueing and Tightening of Bolted Connections	Revision 5
13. PES-S-010	Fasteners	Revision 0
14 ER-AA-330-001	Section XI Pressure Testing	Revision 12
15 WO 01426286-01	Clean Unit 1 A CW Inlet Bay & Bypass Line	01/14/2013
16. WO 01422993-01	Clean Unit 1 A CW Inlet Bay	02/16/2013
17. Job 02-07-205	1A CW01PA Bay Inspection Report	03/27/2013
18. Same as Title	Unit 1 Service Water Tunnel Inspection Report	11/25/2013
19. Same as Title	Unit 2 Service Water Tunnel Inspection Report	11/22/2013
20. WO 01441059	[Unit 1] Inspection of North End of WS [Water Service] for Corbicula and Sediment	11/22/2013
21. WO 01304105	[Unit 1] Inspection of North End of WS [Water Service] for Corbicula and Sediment	05/24/2011
22. WO 01435788	[Unit 2] Inspection of South End of WS [Water Service] for Corbicula and Sediment	11/22/2013

Document	Title	Revision / Date
23. WO 01058326	[Unit 2] Inspection of South End of WS [Water Service] for Corbicula and Sediment	05/12/2009
24. WO 00835807	[Unit 2] Inspection of South End of WS [Water Service] for Corbicula and Sediment	05/23/2007

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the staff made the following observations:

- LRA Section B.2.1.11 includes an enhancement (Enhancement 1) to the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” and “corrective actions” program elements to ensure the proper specification of bolting material, lubricants and sealants, storage, and installation torque or tension to prevent or mitigate the degradation and failure of closure bolting. The staff noted that the respective GALL Report AMP XI.M18 program elements recommend the implementation of the guidelines in the following reports to prevent and mitigate degradation and failure of closure bolting: EPRI-NP 5769, “Degradation and Failure of Bolting in Nuclear Power Plants, Volumes 1 and 2,” dated May 5, 1988; NUREG-1339, “Resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants,” issued June 1990; and EPRI TR-104213, “Bolted Joint Maintenance and Applications Guide,” issued December 1995. The staff notes that the AMP is consistent with the GALL Report recommendations for guidelines that should be referenced in the applicant’s Bolting Integrity Program basis document or procedures to make the AMP consistent with the GALL Report AMP XI.M18, or both. During the audit, the staff reviewed the Bolting Integrity Program basis documents and existing procedures. As part of its review, the staff verified that the guidelines recommended by the GALL Report AMP XI.M18 were either already included in the existing procedures or were identified in the program basis documents as guidelines to be added to the procedures before the period of extended operation.
- LRA Section B.2.1.11 includes an enhancement (Enhancement 5) to the “parameters monitored or inspected” and “detection of aging effects” program elements. The LRA states that the applicant will implement the enhancement to the Bolting Integrity Program to “perform visual inspections of submerged bolting for the service water diver safety barrier and diesel fire pump suction screens for loss of material and loss of preload during maintenance activities.” During the audit, the staff reviewed work orders for maintenance of the Unit 1 and Unit 2 service water tunnels. Based on its review, the staff noted that the service water diver safety barriers and diesel fire pump suction screens located in the service water tunnels of Unit 1 and Unit 2 are inspected by divers during maintenance activities done to clean and remove foreign material (e.g., sediment, Bryozoa growth, and corbicula) from the diver safety barriers, diesel fire pump, service water pump, and other components in the tunnels. The staff also noted that bolts are inspected during these maintenance activities. In addition, based on its review of

pertinent work orders and documentation of the service water tunnel inspections done since 1998, the staff noted that these maintenance activities are completed approximately once every 2 years.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M18. The staff’s evaluation of aspects of the program elements associated with enhancements will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.12, Open-Cycle Cooling Water System

Summary of Information in the Application. The LRA states that AMP B.2.1.12, “Open-Cycle Cooling Water System,” is an existing program with enhancements that will be consistent with the elements in GALL Report AMP XI.M20, “Open-Cycle Cooling Water System.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP, which will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of portions of the lake screen house, one of the service water pump rooms, and one of the diesel generator rooms. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “biofoul,” “erosi,” “heat sink,” “heat trans,” “mic,” “min wall,” “nodu,” “service water,” “sediment,” and “89-13.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified during the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
LA-PBD-AMP-XI.M20	Program Basis Document, Open-Cycle Cooling Water System	Revision 2
ER-AA-340	GL 89-13 Program Implementing Procedure	Revision 7
ER-AA-340-1001	GL 89-13 Program Implementation Instructional Guide	Revision 9
ER-AA-5400-1001	Raw Water Corrosion Program	Revision 7

Document	Title	Revision / Date
Docketed Letter	Generic Letter 89-13 Revised Response LaSalle County Station	07/28/1998
Docketed Letter	2004 Regulatory Commitment Change Summary Report Commitment Revision Tracking Nos. 04-003 through 04-008	10/11/2005
Docketed Letter	2005 Regulatory Commitment Change Summary Report Commitment Revision Tracking No. 05-001	09/15/2006
Docketed Letter	2006 Regulatory Commitment Change Summary Report Commitment Change Tracking No. 06-002	12/14/ 2007
Docketed Letter	2007 Regulatory Commitment Change Summary Report Commitment Change Tracking No. 06-004	12/05/2008
Docketed Letter	2008 Regulatory Commitment Change Summary Report Commitment Change Tracking No. 08-002, 08-003	11/18/2009
Docketed Letter	2009 Regulatory Commitment Change Summary Report Commitment Change Tracking No. 08-001	05/07/2010
N/A	System and Structure Screening Report, Essential Cooling Water System	Revision 5
AR02429128	Leak Identified at Base of Weld	12/23/2014
AR01595598	Additional IEMA Questions on Minimum Wall Issues	12/11/2013
AR01374663	Monitor 0Ws32A-4" per Raw Water Corrosion Program	06/05/2012
AR01186590	Aged Service Water Pipe Degradation	03/11/2011
AR00706455	LaSalle's Inspection Results from Byron's SX Piping Failure	12/03/2007
AR00176406	Belzona Coating Pieces Found in Upstream Piping	09/18/2003

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

As part of the audit, the staff reviewed the System and Structure Screening Report, Essential Cooling Water System, and noted that the component type “fish barrier” includes the stainless steel buoy cylinders, cable, and wire cloth. The accompanying comment states that a shad net is installed in the lake screen house flume and that the polymeric portions of the shad net (netting, twine, and ty-wraps) are periodically replaced, making them short-lived and not subject to an aging management review (AMR).

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and

trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M20. The staff’s evaluation of aspects of the program elements associated with the enhancements will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.13, Closed Treated Water Systems

Summary of Information in the Application. The LRA states that AMP B.2.1.13, “Closed Treated Water Systems,” is an existing program with an enhancement that will be consistent with the program elements in GALL Report AMP XI.M21A, “Closed Treated Water Systems.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancement associated with this AMP. The enhancement will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “crack,” “erosion,” and “leak.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
LA-PBD-AMP-CI.M21A	Program Basis Document, Closed Treated Water Systems	Revision 1
CY-AA-120-400	Closed Cooling Water Chemistry (Corporate)	Revision 12
CY-AA-120-4000	Closed Cooling Water Chemistry Strategic Plan	Revision 4
LOP-WR-03	Reactor Building Closed Cooling Water System Chemical Addition	Revision 5
LOP-VP-08	Primary Containment Chilled Water System	Revision 8
IR 1614782-02	Review Fleet Sulzer RRP Designs. Determine Applicability of Monticello OPEX and Generate Actions if Any.	01/28/2014
AR01451534	Leakage from WR System	12/12/2012
AR01232663	0 RBCCW Heat Exchanger Needs Repair during Next Inspection	06/24/2011
AR01207987	Trends in 1 RBCCW CCW – Increasing Nitrates	04/26/2011
AR00299270	WR Inlet Piping to 2A RR Motor Air Cooler is Leaking	02/09/2005
AR00200440	1B RR Pump Motor Cooler Leaking	02/09/2004
AR00200182	Potential Leak in 1B RR Pump East Winding Cooler	02/06/2004

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancement. During the audit, the staff verified that the “scope of program,” “preventive actions,” “monitoring and trending,” and

“acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In order to verify that the enhancement will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing RAIs for the subjects discussed below.

- (1) The LRA AMP states that the “parameters monitored or inspected” and “detection of aging effects” program elements will be enhanced by performing condition monitoring inspections on a representative sample of piping and components. Where practical, the applicant’s sample selection will focus on locations that are most susceptible to corrosion, stress corrosion cracking, or fouling, and they will be inspected at an interval not to exceed once in 10 years during the period of extended operation. Although the GALL Report AMP recommends inspections of a representative sample, SRP-LR Section A.1.2.3.4 states that when sampling is used to represent a larger population of components, applicants should provide the basis for the sample size. Because the applicant did not include any details about the sample size, the staff could not ensure that the applicant’s sample size will provide reasonable assurance that the effects of aging would be adequately managed.
- (2) The LRA AMP states that the aging effects being managed by the Closed Treated Water System program include reduction of heat transfer. During its review of the LRA, the staff noted that the heat exchanger tubes in LRA Table 3.3.1-8, “Diesel Generator and Auxiliaries System,” are the only components for which this AMP manages this aging effect. The staff also noted that the heat exchanger tubes for the drywell penetration cooling coils in LRA Table 3.3.2-1, “Closed Cycle Cooling Water System,” are not being managed for reduction of heat transfer because crediting the cooling of the drywell penetrations is not necessary for license renewal. In that regard, the staff noted that, for managing the aging of concrete exposed to elevated temperatures (AMR item 3.5.1-3), the applicant stated this item was not applicable because localized concrete temperatures greater than 200 °F were not reported. The staff noted that, although crediting the cooling of the drywell penetrations may not be required, cooling of the drywell penetrations is the reason why localized concrete temperatures greater than 200 °F were not reported. The staff will consider issuing an RAI to clarify whether cooling to the drywell penetration coils will be credited for license renewal or whether the concrete adjacent to the drywell penetrations will be managed for aging effects related to elevated temperatures.

During the audit of the “operating experience” program element, the staff reviewed Exelon’s evaluation of industry operating experience related to closed treated water systems. In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing RAIs for the subjects discussed below.

- (1) The LRA AMP states that the aging effects being managed by the Closed Treated Water System program include cracking. During its review of the LRA, the staff noted that the heat exchanger tubes and tube sheets in LRA Table 3.3.1-8, “Diesel Generator and Auxiliaries System,” are the only components for which this AMP manages this cracking. During its review of operating experience, the staff identified plant-specific reports that did not appear to be considered for determining applicable aging effects. Specifically, Action Request (AR)00299270,

AR00200440, and AR00200182 document cracking in the heat exchanger tubes associated with the reactor recirculation pump motor coolers. However, heat exchanger tubes and tube side components for the reactor recirculation pump motor coolers in LRA Table 3.1.2-1, "Reactor Coolant Pressure Boundary System," are not being managed for cracking. The staff will consider issuing an RAI to clarify whether cracking needs to be managed in these components.

- (2) Licensee Event Report (LER) 263/2014-001, "Primary System Leakage Found in Recirculation Pump Upper Seal Heat Exchanger," documents IGSCC in a stainless steel heat exchanger tube of the reactor building closed cooling water system at the Monticello Nuclear Generating Plant. According to the report, the cracking was caused by unrecognized localized boiling that led to an unexpectedly high concentration of chlorides from the chemistry constituents in the closed treated water system. Exelon's evaluation of this operating experience report (IR 1614784-02) identifies differences between the Monticello Nuclear Generating Plant and LSCS heat exchanger configurations and states that the LSCS coil configuration does not allow similar chlorides to concentrate on tubes. The evaluation concludes that the heat exchanger design supports a much less challenging environment for the tubes. In its review of this evaluation, the staff could not conclude that the coil configuration at LSCS would prevent similar chloride concentrations. In addition, although LSCS's heat exchanger design presents a much less challenging environment for the tubes, without specific temperature information, the staff could not determine whether localized boiling could occur and thus lead to a comparable unexpectedly high concentration of chlorides. Based on temperature data provided to the staff during the audit, localized boiling within the heat exchanger did not appear to apply to LSCS. However, the evaluation of the industry operating experience documented in IR 1614784-02 did not provide sufficient bases to show that the coil configuration would prevent similar chloride concentration and (even though "much less challenging") that localized boiling would not occur.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M21A. The staff also identified certain aspects of the "parameters monitored or inspected" and "detection of aging effects" program elements of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.14, Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems

Summary of Information in the Application. The LRA states that AMP B.2.1.14, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems," is an existing

program with and enhancement that will be consistent with the program elements in GALL Report AMP XI.M23, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems." To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed an enhancement associated with this AMP. The enhancement will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant's staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the following equipment areas: reactor building crane, refueling platform, and scorpion work platform. The staff also conducted an independent search of the applicant's operating experience database using keywords: "wear," "corrosion," "bolt," "torque," "preload," "loose," and "crack."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M23	Program Basis Document Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	Revision 1
2. ASME B30.2-2011	ASME Safety Standard B30.2, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems"	07/29/2011
3. ASME B30.11-2010	Monorails and Underhung Cranes	04/16/2010
4. LMS-HC-01G	Manual Chain Hoist Monthly and Annual Preventive Maintenance and Examination	Revision 20 07/16/2013
5. LMS-HC-01H	Electric Hoist Monthly and Annual Preventive Maintenance and Examination	Revision 17 09/16/2013
6. LMS-HC-01I	Electric/Pneumatic Chain Hoist Monthly and Annual Preventive Maintenance and Examinations	Revision 19 10/19/2012
7. AR01233351 Report	Reactor Building Crane 90-Day (Annual) Inspections Results	06/27/2011
8. WO 01450767-01	Repair Reactor Building Crane per as Found of Inspection	11/11/2011
9. AR01333652 Report	U2 TB Crane Structural Bolting Issues	02/28/2012
10. AR01335674	Loose Bolt Identified on Unit 2 Turbine Building Crane	03/03/2012
11. WO 01302916-03	MM Assist Vendor with Repair of Turbine Building Crane	02/18/2012
12. WO 95093319	MM Perform Annual Inspection of 1HC-01G Turbine Building Crane	11/11/2010
13. MA-AA-716-021	Rigging and Lifting Program	Revision 22
14. LMS-HC-01	Stations Cranes and Hoists Preventive Maintenance and Examination	Revision 43
15. LMS-HC-01A	Reactor Building and Turbine Building Crane Monthly and Annual Preventive Maintenance and Examination	Revision 12 10/25/2013
16. UFSAR	LaSalle County Station Updated Safety Analysis Report Chapter 9	Revision 19

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancement.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program element of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M23. The staff’s evaluation of aspects of the program elements associated with the enhancement will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.15, Compressed Air Monitoring

Summary of Information in the Application. The LRA states that AMP B.2.1.15, “Compressed Air Monitoring,” is an existing program with an exception and enhancements that will be consistent with the program elements in GALL Report AMP XI.M24, “Compressed Air Monitoring.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the exception and enhancements associated with this AMP. The exception to the GALL Report AMP and the enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “dew point,” “instrument air,” and “air quality.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M24	Program Basis Document	Revision 1
2. ER-AA-200	Preventative Maintenance Program	Revision 1
3. AR00200179	FME in Instrument Air Lines	02/06/2004
4. AR00197873	1ES005 – Small Cut in Instrument Air Lines Copper Fitting	01/28/2004

Document	Title	Revision / Date
5. AR01168727	Unit 2 "A" in Dryer Switching Failure Alarm	01/30/2011
6. AR01203773	B in Dryer High Dew Point Alarm	04/17/2011
7. AR00477320	U-1 in Dew Point PM Not Utilizing the New Instrumentation	04/11/2006
8. AR01197660	U-2 in Trouble Alarm	04/04/2011
9. ER-AA-700-405	Compressed Air Monitoring Aging Management Program	Revision 0
10. RP-LA-826	Pneumatic/Air System Quality Surveillance	Revision 2
11. LOR-1PM10J-B105	U-1 Station Air Dryer Trouble	Revision 4
12. LOR-1PM10J-B106	0 Station Air Dryer Trouble	Revision 4
13. LOR-2PM10J-B105	U-2 Station Air Dryer Trouble	Revision 4
14. LOR-1PM13J-A404	Instrument Nitrogen System Trouble	Revision 7
15. LOR-1PM13J-B404	Instrument Nitrogen System Trouble	Revision 6
16. LOR-2PM13J-A404	Instrument Nitrogen System Trouble	Revision 7

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed exception and enhancements.

During the audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. The staff also verified that aspects of the "monitoring and trending" program element not associated with the exceptions are consistent with the corresponding program elements in the GALL Report AMP. The staff's evaluation of aspects of this program element associated with the exception will be addressed in the SER.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M24. The staff also verified that for the "monitoring and trending" program element, the aspects of the LRA AMP program element not associated with the exception are consistent with the corresponding program element in GALL Report AMP XI.M24. The staff's evaluation of aspects of the program element associated with the exception will be addressed in the SER. The staff's evaluation of aspects of the program elements associated with enhancements will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the

staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.16 Fire Protection

Summary of Information in the Application. The LRA states that AMP B.2.1.16 “Fire Protection,” is an existing program with enhancements that is consistent with the program elements in GALL Report AMP XI.M26 “Fire Protection.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “carbon dioxide/CO₂,” “Cardox tank,” “fire doors,” and “fire wraps.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. Same as Title	Fire Protection System - System and Structure Screening Report (Part of the Auxiliary Systems Grouping)	Revision 6
2. LA-PBD-AMP-XI.M26	LCS Units 1 & 2 License Renewal Project Aging Management Program Basis Document, Books 1 of 2 and 2 of 2	Revision 1
3. LES-CO-03 CO2	Fire Protection System Functional and Flow Test	Revision 20
4. LES-FP-34	Inspection of Bus Duct Seals on Units 1 & 2	Revision 0
5. LMS-FP-08	Fire Hose Station and CO ₂ Hose Reel Annual Inspection	Revision 23
6. LMS-FP-22	Fire Damper Visual Inspection	Revision 13
7. LOS-AA-W1	Technical Specifications Weekly Surveillance	Revision 75
8. LTS-1000-29	Water Tight Penetration Inspection	Revision 13
9. LTS-1000-40	Mechanical Fire Penetration Inspection	Revision 9
10. LTS-1000-42	Fire Assembly Integrity Inspection	Revision 13
11. AR00166123	Degraded Fire Proofing in Div. 1 125 VDC Battery Room	07/03/2002
12. AR00151543	Deficiencies Discovered during Fire Protection Quarterly System Walkdown	03/13/2003
13. AR00196256	Portions of Structural Steel Fire Proofing Missing	01/19/2004
14. AR00252342	Turbine Building Air Leakage at Piping Penetration	09/13/2004
15. AR00291211	Fire Barriers Inoperable for Greater Than 7 Days	01/15/2005
16. AR00361832	Fire Proofing Missing	08/10/2005
17. AR00518695	Cable Tray Fire Proofing is Eroding Away from Roof Leakage	08/10/2006
18. AR00444314	Fire Proofing Falling	09/19/2006

Document	Title	Revision / Date
19. AR00560695	Fire Door Inoperable	11/21/2006
20. AR00566015	Fire Proofing Falling Off Beam at 749 R-23	12/06/2006
21. AR00690374	Corroded Piping on CO ₂ Line	10/27/2007
22. AR00981971	NRC Identified Fire Protection Issues	10/14/2009
23. AR01094223	Fire Protection CO ₂ Tank Decreasing Level (Trend)	07/25/2010
24. AR01118498	Gypsum Missing from Underside of Fire Rated Slab	09/27/2010
25. AR01172964	Repair Fire Seal for Penetration AB-2148	02/08/2011
26. AR01257929	Piping Downstream of 0CW016 Leaks CO ₂ Out	08/31/2011
27. AR01508031	NOS ID: MCR Floor Penetration/Envelop Question	04/29/2013
29. AR01530692	Small Hole in VR Ductwork	06/29/2013
30. AR01558315	NOS ID: (ENH) Evaluate Fire Proofing Structural Steel Attach	09/13/2013
31. AR02386194	NOS ID Fire Coating Missing	09/25/2014
32. AR02421068	NRC ID: 6" x 2" Piece of Fireproofing Missing – U1 Div. 2 SWGR	12/04/2014

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit for the Fire Protection program, the staff made the following observations:

- For the “scope of program,” the staff noted that the GALL Report recommends that the scope of the Fire Protection program encompasses fire resistance materials (e.g., fire wrapping) that serve a fire barrier function. The staff noted that the fire protection system description in the LRA included fire wraps (page 2.3-81 of the LRA). The staff further noted that Revision 6 to the applicant’s Fire Protection Report includes Darmatt KM-1 and Kaowool as fire wraps. However, these items are not specifically included in LRA Table 3.3.2-12, which includes fire protection system components that are subject to an AMR.
- In Revision 6 to the Fire Protection System—System and Structure Screening Report (Part of Auxiliary Systems Grouping), the applicant indicated that Darmatt KM-1 is a ceramic fiber (fire barriers—steel components), and Kaowool is a mineral fiber (fire barriers—penetration seals and fire stops). Table 3.3.2-12 of the LRA lists both ceramic fiber and mineral fiber. Therefore, consistent with the GALL Report guidance, both Darmatt KM-1 and Kaowool are being managed for aging effects.
- The staff inquired whether the external surfaces of the low-pressure carbon dioxide tank (Cardox™ bulk storage tank) could be inspected because the tank is covered under insulation. The application stated that the carbon dioxide tank could not be readily inspected because the tank contains a factory-installed 4-inch minimum polyurethane layer sheathed inside an aluminum outer jacket that insulates the steel pressure vessel

(based on the tank supplier's literature). In LRA B.2.1.16, the applicant proposed an enhancement (Enhancement 2) to perform visual inspection on the external surfaces visible to eyes. The staff noted that this practice is consistent with general industry practice of minimizing the disturbance of a factory-installed moisture barrier for the purpose of inspection only.

- The staff noted that the applicant's Units 1 and 2 Technical Requirements Manual (TRM) currently requires that the tank level and pressure be checked (at least 50-percent full and pressure greater than 290 pounds per square inch (psi)) once every 7 days (technical specification requirements (TSR) 3.7.1.1 and 3.7.1.2, in LSCS TRM 3.7 Plant Systems, section 3.7.1 CO₂ Systems). In addition, the staff noted that a system function test (including electrical actuation and valve cycling) is performed on the CO₂ system every 24 months (LaSalle Station Fire Protection Report Revision 6 LaSalle NFPA Code Deviation Summary Matrix, page 5.2-4), which is consistent with the inspection frequency guidance in the GALL Report. The staff noted that the CO₂ tank level/pressure verification, along with the visual inspection of tank external surfaces visible to eyes, provided assurance that the CO₂ tank corrosion could be detected.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M26. The staff's evaluation of aspects of the program elements associated with enhancements will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.17, Fire Water System

Summary of Information in the Application. The LRA states that AMP B.2.1.17, "Fire Water System," is an existing program with enhancements and exceptions that is or will be consistent with the program elements in GALL Report AMP XI.M27, "Fire Water System" as modified by LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation." To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the exceptions and enhancements associated with this AMP. The exceptions to the GALL Report AMP and the enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant's staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of

the applicant's operating experience database using keywords: "clog," "damage," "buried," "jacket," "lining," "min wall," "sprinkler," "perforat," "through wall," "mic," and "leak."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LOS-FP-A3	Fire Protection Sprinkler, Spray, and Deluge Drain Flow and Cycling Test	Revision 29
2. ER-AA-2030	Conduct of Plant Engineering Manual	Revision 14
3. LOS-FP-SR3	Fire Protection Water Spray/Sprinkler Systems Headers, Nozzles and Sprinkler Integrity Inspection	Revision 3
4. WO 01465579	LOS-FP-A3 Fire Protection Sprinkler Valves	08/15/2012
5. WO 01575636	LOS-FP-A3 Fire Protection Sprinkler Valves	08/22/2013
6. WO 01668353	LOS-FP-A3 Fire Protection Sprinkler Valves	08/25/2014
7. AR01105024	Valve Leakby 2FP063	08/24/2010
8. AR01253763	Alarm Chamber Drain Line Clogged	08/21/2011
9. AR01654200	Drain Line Plugged 2FP071	05/01/2014
10. AR00988429	Corrosion Found during Replacement of 0FP210B	11/03/2009
11. AR01502925	FP Jockey Pump 0FP25P Unable To Maintain Fire Protection Pressure	04/17/2013
12. AR01152105	0FP25P (Fire Jockey Pump) Fails To Maintain Header Pressure	12/14/2010
13. AR00257117	FP Header Pressure Degradation	06/26/2004
14. AR02420308	Sprinkler Piping Leak	12/03/2014
15. AR01606545	Leak on Fire Protection Sprinkler U1 710 HTR Bay X-9	01/09/2014
16. AR01314172	Fire Header through Wall Leak	01/17/2012
17. AR01599553	Hole in Downstream Piping of 1FP027	12/20/2013
18. TRM 3.7.k	Spray and Sprinkler Systems	Revision 4
19. P&ID M-126 Sheet 2	P&ID Fire Protection System	Revision AA
20. P&ID M-71 Sheet 1	LR Boundary Drawing P&ID Fire Protection Units 1 & 2	Revision 0
21. AR01105024	Valve Leakby 2FP063	08/24/2010
22. AR00777207	2FP007	05/19/2008
23. AR00568415	Valve 1FP058 Leaks by	12/12/2006
24. AR00568411	Valve 0FP070 Leaks by	12/12/2006
25. M-775 Sheet 1	Arrangement Fire Protection System	Revision A
26. AR01510625	IEMA Questions on Fire Protection Yard Loop Flow Test	05/06/2013
27. LA-PBD-AMP-XI.M27	Program Basis Document, Fire Water System	Revision 0

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed exceptions and enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that for the “detection of aging effects” program element, sufficient information was not available to determine whether it was consistent with the corresponding program elements of the GALL Report AMP. In order to obtain the information necessary to verify whether this program element is consistent with the corresponding program elements of the GALL Report AMP, the staff will consider issuing RAIs for the subjects discussed below.

- The “detection of aging effects” program element of the LRA AMP states that sprinklers will be inspected by performing a visual inspection for corrosion every 24 months. The GALL Report AMP recommends annually inspecting for leakage, loss of fluid in the glass bulb heat responsive element, and loading, in addition to inspecting for corrosion. It is not clear to the staff that these statements are consistent because the applicant did not address the additional inspection criteria or the increased frequency of inspections.

In order to verify that the enhancements will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing an RAI for the subject discussed below.

- During the audit, the staff noted the LRA AMP lacked an enhancement to the “acceptance criteria” program element. The GALL Report, as modified by LR-ISG-2012-02 states that, “if the presence of sufficient foreign organic or inorganic material to obstruct pipe or sprinklers is detected during pipe inspections, the material is removed and its source is determined and corrected.” The LRA AMP program basis documents lacked the acceptance criteria aspect of removing known foreign materials and determining the source and correcting the issue.

In order to verify that the exceptions will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing RAIs for the subjects discussed below.

- The LRA AMP states an exception to the “detection of aging effects” program element. The exception states that flow testing will be performed on wet-pipes, dry pipe sprinklers, and deluge systems in lieu of the testing of the main drain. It is not clear to the staff how the applicant is meeting the intent of the testing of the main drain by performing the aforementioned alternative tests.
- The LRA AMP states an exception to the “detection of aging effects” program element. LOS-FP-A3 states in step D.6 that the applicant will record pressure drops and write an issue report if these pressure drops vary by greater than 5 psi and if the data vary substantially. However, NFPA 25, “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,” issued 2014, states that less than a 10-percent reduction in full flow when it is compared to the original acceptance test or previously performed tests meets acceptance criteria. It is not clear to the staff how measuring pressure drops is consistent with NFPA 25, as referenced in AMP XI.M27.
- The LRA AMP states an exception to the “detection of aging effects” program element. The exception states that external visual inspections of the deluge header inside the

charcoal filter plenum every refuel cycle and internal visual inspections of one of the 11 charcoal filter deluge systems every 5 years will be performed in lieu of testing with either water or air to verify no obstructions. It is not clear to the staff how the sample size and frequency of inspections will provide reasonable assurance of the intended function of the charcoal filter deluge system.

During the audit, the staff made the following observations:

- Issue Reports were written for four different fire protection valves that were experiencing leakby. The applicant provided drawings (M-126, Sheet 2, and M-71, Sheet 1) to show that the upstream and downstream portions are all wet-pipe, thus not providing issue with normally dry, periodically wetted piping that might be experiencing continually wet conditions due to a leaking valve.
- Several Issue Reports were written concerning a fire jockey pump that was unable to maintain header pressure. However, the two other fire jockey pumps are able to perform the design function as required by TRM 3.7.j.
- The staff reviewed many Issue Reports on fire water piping that was clogged or corroded, or both. The staff confirmed that the issues are being handled through the corrective action process.
- Through-wall leaks in fire water piping were noted during a review of the operating experience database. The fire water system is a raw water system; although not uncommon, raw water systems tend to have more potential loss of material and flow blockage issues.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). However, in order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing an RAI for the subject discussed below.

- During its search of the operating experience database, the staff noted that the applicant generated many Issue Reports on the fire water protection system regarding degradation of flow characteristics (i.e., C factor) in the underground fire loop, which is a raw water system. During the audit, the applicant provided a marked-up copy of plant drawing M-775, Sheet 1, showing the fire protection yard loop with annotated flow testing node points. Data were provided to the staff on the C factor from years 2006 through 2014. The piping segment from the diesel-driven fire pump to node 515 shows a significant degrading trend. The staff does not have reasonable assurance that the aforementioned piping segment will be able to perform its intended function during the period of extended operation.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program

elements in GALL Report AMP XI.M27. The staff’s evaluation of aspects of the program elements associated with enhancements will be addressed in the SER. The staff also identified certain aspects of the “detection of aging effects” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.18, Aboveground Metallic Tanks

Summary of Information in the Application. The LRA states that AMP B.2.1.18, “Aboveground Metallic Tanks,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.M29, “Aboveground Metallic Tanks,” as modified by LR-ISG-2012-02, “Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion under Insulation.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements are evaluated in the SER. During the audit, the staff identified a difference between the LRA AMP and the GALL Report AMP that should have been identified as an exception. The staff-identified difference is evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted a walkdown of the cycled condensate storage tanks, 1CY01T and 2CY01T, for Unit 1 and Unit 2 respectively. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “tank,” “inspect,” and “cycled condensate.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M29	Aboveground Metallic Tanks Program Basis Document	Revision 1 09/25/2014
2. Drawing 74-21-41 01	Outline - Cycled Condensate Storage Tank (1CY01T & 2CY01T)	08/15/1974
3. Drawing S-1740	Cycled Condensate (CY) Storage Tank Berm Plan and Sections	N/A
4. LA-AMRBD-MEAE	Materials, Environments, and Aging Effects – Aging Management Review Basis Document	Revision 0 01/29/2013
5. PMID 186119-01, WC-AA-120	Inspection of Tank Base Perimeter Caulking	Revision 1
6. ER-AA-700-404	Aging Management Program for Aboveground Metallic Tanks	Revision 0
7. PMID 00061815-02, WC-AA-120	1CY01T – Perform NDE of Tank Floor	Revision 1
8. PMID 00068642-02, WC-AA-120	2CY01T – Perform NDE of Tank Floor	Revision 1

Document	Title	Revision / Date
9. Drawing S-170	Miscellaneous Outdoor Foundations – Sheet 1	N/A
10. Drawing 74-2141 22	Shell	03/13/1975
11. Drawing 74-2141 23	Roof	03/13/1975
12. LS-AA-125-1001	1CY01T Tritium Leakage Root Cause Investigation	08/12/2010
13. LAS-03116	Evaluation of Two Floor Samples from LaSalle Cycled Condensate Storage Tank 1CY01T	07/29/2010
14. LAS-52922	Failure Evaluation of Pitting on the Aluminum Plate from the CY Tank Floor, Component ID: 2CY01Y, AR1231679, LaSalle County Unit 2	07/08/2011
15. Drawing 176015	Bottom Repair Tank, 1CY01T & 2CY01T	07/09/2010
16. Drawing 081779	Repair to Existing Aluminum Tank	Revision 0
16. 10-275	Ultrasonic Thickness Examination Report, 1CY01T	07/05/2010
17. 10-277	Ultrasonic Thickness Examination Report, 1CY01T	07/06-09/2010
18. 11-186	Ultrasonic Thickness Examination Report, 2CY01T	06/13-15/2011
19. WO 1257328-05	Work Order To Perform Weld Repairs or Install Patches, 1CY01T	01/26/2011
20. WO 1257328-21	Work Order To Remove Sand Samples, 1CY01T	01/26/2011
21. AR02477424	Repair Caulking around CY Tank Base	03/31/2015
22. AR02477426	Repairs Needed for U2 CY Tank Caulking around Base of Tank	03/31/2015

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program, as modified by the proposed enhancements. During the audit, the staff verified that the “scope of program” and “preventive actions” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. The staff also identified a difference between the LRA AMP and the GALL Report AMP that should have been identified as an exception while conducting the audit. The staff verified that aspects of the “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements not associated with the staff-identified difference are consistent with the corresponding program elements in the GALL Report AMP. A description of the staff-identified difference is provided below.

- GALL Report AMP XI.M29, as modified by LR-ISG-2012-02, states that the program “manages the effects of loss of material and cracking on the outside and inside surfaces of aboveground tanks constructed on concrete or soil.” In addition, GALL Report AMP XI.M29 states that inspections are conducted in accordance with Table 4a, “Tank Inspection Recommendations,” which identifies cracking as an aging effect that should be managed for stainless steel and aluminum alloys. The Aboveground Metallic Tanks Program does not manage the aging effect of cracking and does not take an exception to GALL Report AMP XI.M29.
- The staff also noted that LRA Table 3.4.2-1, “Condensate System,” plant specific note 3, states that the tanks are constructed from alloys that are not susceptible to SCC. During the audit, the staff reviewed drawings and construction details associated with the two cycled condensate storage tanks. The drawings specify that the tanks are constructed from 5454-O plate, 6061-T6 structural members, 6061-T6 piping, and 6061-O extruded shapes.

While conducting the walkdown of the cycled condensate storage tanks, 1CY01T and 2CY01T, the staff observed that the caulking at the interface of the tank bottom and foundation was degraded in locations. The degradation was in the form of discontinuities and decohesion. AR02477424 and AR02477426 address the degradation of the caulking.

During the audit of the “operating experience” program element, the staff’s independent review found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). However, the staff noted operating experience associated with enhancements made to this program. In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing RAIs for the subjects discussed below.

- The LRA AMP states an enhancement (Enhancement 3) to the “parameters monitored or inspected” and “detection of aging effects” program elements. The enhancement states tank bottoms will be volumetrically inspected within the 10 years before entering the period of extended operation and each 10-year period during the period of extended operation. The inspection method and frequency is consistent with the GALL Report.

The staff could not determine the sufficiency of Enhancement 3 during the audit. The bottoms of both cycled condensate storage tanks have experienced loss of material. The Unit 1 tank experienced leakage resulting from pitting in the tank bottom. Patches have been installed on the bottoms of both tanks to repair areas that were found to be below nominal thickness. It is unclear to the staff whether the extent and locations of volumetric inspections being performed are sufficient to manage loss of material during the period of extended operation.

- The LRA AMP states an enhancement (Enhancement 4) to the “parameters monitored or inspected” and “detection of aging effects” program elements. The enhancement states that caulking at the tank-foundation interface is visually inspected for signs of degradation. The visual inspection of the flexible caulk seal at the perimeter of the tank-foundation interface is not supplemented by physical manipulation.

The staff could not determine the sufficiency of Enhancement 4 during the audit. The loss of material experienced by the tank bottoms has been partially attributed to chloride and moisture intrusion resulting from the failure of the flexible caulk seal at the tank-foundation interface. It is unclear to the staff whether visual inspection of the caulk, without augmentation by physical manipulation, is sufficient to manage the degradation of the caulk during the period of extended operation.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the UFSAR supplement was an adequate description of the LRA AMP. In order to obtain the information necessary to verify the sufficiency of the UFSAR supplement program description, the staff will consider issuing an RAI for the subject discussed below.

- LR-ISG-2012-02, Table3.0-1, states that visual examination is sufficient to monitor the degradation of sealant or caulking when supplemented with physical manipulation. The UFSAR does not address physical manipulation as an inspection method for sealant or caulking.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M29. The staff’s evaluation of aspects of the program elements associated with enhancements and staff-identified differences will be addressed in the SER.

Based on this audit, the staff also found that additional information is required before a determination can be made regarding whether the applicant’s operating experience supports the sufficiency of the LRA AMP. In addition, the staff identified a need for additional information regarding the adequacy of the program description in the UFSAR supplement.

LRA AMP B.2.1.19, Fuel Oil Chemistry

Summary of Information in the Application. The LRA states that AMP B.2.1.19, “Fuel Oil Chemistry,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.M30, “Fuel Oil Chemistry.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the emergency diesel generator (EDG) fuel tanks, EDG day tanks, and fire protection diesel generator fuel tanks. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “tank,” “microbiological,” and “fuel oil.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1.LA-PBD-AMP-XI.M30	Program Basis Document	Revision 1
2.LA-PBD-AMP-XI.M30	Program Basis Document	Revision 2
3. C-74-188	Drawing: EDG Day Tank	Revision 6
4. C-74-187	Drawing: HPCS Diesel Day Tank	Revision 7
5. 2673255	Drawing: Fire Diesel Day Tank	09/26/1975
6. 74-2130	Drawing: HPCS Main Tank	10/17/1981
7. 74-2131	Drawing: EDG Main Tank	10/17/1981
8. N/A	Gap Analysis Report	N/A
9. AR01467889	TSC/Security Diesel Tank Cathodic Protection Results	01/28/2013
10. AR01276666	Deficiencies Noted during B.5.B Pump Dry Run	10/14/2011
11. AR00869600	Oil Sep. / D.O. Tank Cleanouts - Assign to Proper Budget	01/21/2009
12. AR01416178	Possible Limiting Value Change for ASTM D 6079	09/20/2012
13. AR00855678	Ice Buildup on Top of the TSC/SEC DG Fuel Oil Storage	12/12/2008

Document	Title	Revision / Date
14. AR00379091	Microbiological Analysis for Diesels	09/28/2005
15. AR00485416	High Total Aerobic Bacteria (TABS) for 1A & 2B Diesel Coolant	05/01/2006
16. AR00482776	TSC/Security DG Fuel Storage Tank Fuel Out Spec	04/24/2006
17. AR00961947	New Diesel Fuel Oil Water & Sediment Analysis	09/04/2009
18. AR01191254	B.5.B PDDP Fuel Oil Analysis Results Were Not Within Specs	03/23/2011
19. AR01214231	B.5.B PDDP Fuel Oil Analysis Results Were Not Within Specs	05/10/2011
20. AR01228172	Single DO Analysis - Separate Compartments O Delivery Truck	06/13/2011
21. AR01386799	SEC/TSC DG Storage Tank Analysis Out of Spec	07/09/2012
22. AR01239146	SEC/TSC DG Storage Tank Analysis Out of Spec	07/12/2011

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. However, for the enhancement associated with the “parameters monitored or inspected” and “detecting of aging effects” program elements to perform periodic sampling of the stored diesel tanks, the applicant did not identify how these samples will be taken. For a representative sample, the GALL Report recommends either multilevel sampling or, if tank designs do not allow multilevel sampling, then taking samples from the lowest point of the tank. When questioned about this aspect, the applicant revised the program basis document to include the GALL Report’s recommendations on sample locations of stored diesel fuel tanks. This change to the program basis document resolved the staff’s concern.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” “detecting of aging effects,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M30.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.20, Reactor Vessel Surveillance

Summary of Information in the Application. The LRA states that AMP B.2.1.20, “Reactor Vessel Surveillance,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M31, “Reactor Vessel Surveillance.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “weld,” “plate,” “vessel,” “neutron,” “capsule,” “irradiation,” “embrittlement,” and “surveillance program.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M31	Program Basis Document: Reactor Vessel Surveillance	Revision 0 02/14/2014
2. ER-AB-331-103	BWR Vessel Integrated Surveillance Program Implementation	Revision 3
3. LTS-1200-4	Reactor Engineer’s Core Monitoring Surveillance	Revision 36 10/15/2014
4. EPRI-VIP-007-R-003	LaSalle Unit 1 Reactor Pressure Vessel Fluence Evaluation	Revision 0 04/27/2011
5. AR1229987	Work Order Needed To Receive Remnants of Surveillance Capsule	06/17/2011
6. AR1315401	Surveillance Capsule Data Analysis Needed	01/19/2012
7. AR1459827	Unit 1 P-T Nonconservative due to ISP Capsule Analysis	01/08/2013
8. AR1659376	NRC Finding Associated with BWRVIP Capsule Report	05/13/2014

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. For the “detection of aging effects” program element, sufficient information was not available to determine whether it was consistent with the corresponding program element of the GALL Report AMP. In order to obtain the information necessary to verify whether this program element is consistent with the corresponding program element of the GALL Report AMP, the staff will consider issuing RAIs for the subject discussed below.

- The “detection of aging effects” program element of GALL Report AMP XI.M31 states that the program withdraws one capsule at an outage in which the capsule receives a neutron fluence of between one and two times the peak reactor vessel wall neutron fluence at the end of the period of extended operation and tests the capsule in accordance with the requirements in American Society for Testing and Materials (ASTM) E 185-82, “Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels.” The staff noted that the neutron fluence levels

for LSCS Unit 2 surveillance plate and weld materials, as planned in the BWRVIP Integrated Surveillance Program (ISP), are not in the recommended fluence range between one and two times the peak reactor vessel wall neutron fluence at the end of the period of extended operation (i.e., 1.22×10^{18} neutrons per square centimeter).

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant needs additional clarification as described below. In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing RAIs for the subjects discussed below.

- BWRVIP-86, Revision 1, indicates that recently (within the past several years) a capsule containing the surveillance weld material for LSCS Unit 2 should have been withdrawn from a host plant for surveillance testing. However, the LRA (including LRA Section B.2.1.20) does not discuss evaluation of the surveillance data. Additional information is necessary to confirm whether evaluation of the most recent surveillance data is included in the LRA.
- LRA Section B.2.1.20 indicates that, since a damaged spring was discovered on the Unit 2 120 degree capsule in 2007, the capsule was removed from the reactor vessel and placed in the spent fuel pool where it will remain indefinitely. The LRA also indicates that the capsule does not require surveillance testing as part of the BWRVIP ISP. However, the LRA does not provide sufficient information to ensure that the applicant’s assessment of the plant-specific operating experience is adequate to prevent similar events that can affect the availability of reactor vessel surveillance capsules.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the UFSAR supplement was an adequate description of the LRA AMP. In order to obtain the information necessary to verify the sufficiency of the UFSAR supplement program description, the staff will consider issuing RAIs for the subject discussed below.

- BWRVIP-86-A (October 2002) describes the ISP implementation plan for the original license period developed before the issuance of BWRVIP-86, Revision 1, whereas BWRVIP-86, Revision 1-A (October 2012), describes the staff-approved ISP implementation plan for both the original and extended license period. However, the UFSAR supplement description for the Reactor Vessel Surveillance program includes a reference to BWRVIP-86-A (October 2002) rather than BWRVIP-86, Revision 1-A (October 2012).

Audit Results. Based on this audit, the staff verified that “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M31. The staff also identified certain aspects of “detection of aging effects” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also found that additional information is required before a determination can be made regarding whether the applicant’s operating experience supports the sufficiency of the LRA AMP. In addition, the staff identified a need for additional information regarding the adequacy of the program description in the UFSAR supplement.

LRA AMP B.2.1.21, One-Time Inspection

Summary of Information in the Application. The LRA states that AMP B.2.1.21, “One-Time Inspection,” is a new program that will be consistent with the program elements in GALL Report AMP XI.M32, “One-Time Inspection.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff’s audit addressed only the program elements described in the applicant’s basis document. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “fouling,” “corrosion,” and “loss of material.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M32	Program Basis Document	Revision 1

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “detection of aging effects,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M32.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.22, Selective Leaching

Summary of Information in the Application. The LRA states that AMP B.2.1.22, “Selective Leaching,” is a new program that will be consistent with the program elements in GALL Report

AMP XI.M33, “Selective Leaching.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff identified a difference between the LRA AMP and the GALL Report AMP that should have been identified as an exception. The staff-identified difference will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “dealloy,” “dezinc,” “degraph,” “dealum,” and “copper.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M33	Program Basis Document Selective Leaching	Revision 2 01/14/2015
2. LRRCR-TEAM-50	License Renewal Change Request – Selective Leaching and Underground Piping Program Interface for Buried Fire Protection Valves	03/26/2015
3. ER-AA-700-401	Selective Leaching Aging Management Program	Revision 0
4. LRRCR-AMP-26	Applicability of the Selective Leaching Program to Aluminum Bronze	04/02/2015

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding element of the GALL Report AMP. While conducting the audit, the staff also identified a difference between the LRA AMP and the GALL Report AMP that should have been identified as an exception. A description of the staff-identified difference is provided below.

- GALL Report AMP XI.M33 states that materials susceptible to selective leaching include copper alloys with greater than 8-percent aluminum.
- During the audit, the staff noted that the “program description” of the LRA AMP and program basis documents of the Selective Leaching program do not identify copper alloys with greater than 8-percent aluminum as materials susceptible to selective leaching. The Selective Leaching program does not manage the effects of selective leaching in aluminum bronze components and does not take an exception to GALL Report AMP XI.M33.
- The staff reviewed the LRA and the program basis documents provided by the applicant and noted that there are no in-scope components made of aluminum bronze. The staff identified this as a difference that should be an exception and will disposition it accordingly in the SER.

During the audit, the staff also made the following observations:

- The GALL Report states that soil is an environment in which selective leaching may occur. The staff noted that the LRA AMP includes soil as an applicable environment for components susceptible to selective leaching. The program basis document does not include soil as an applicable environment in all aspects of the program. However, the program basis document and the LRA do address and apply the AMP to the appropriate components exposed to soil. The program basis document and the LRA AMR tables are consistent with the GALL Report, and the program manages selective leaching for all susceptible materials exposed to soil.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M33. The staff’s evaluation of the aspects of the “program description” associated with the staff-identified difference will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.23, One-Time Inspection of ASME Code Class 1 Small-Bore Piping

Summary of Information in the Application. The LRA states that AMP B.2.1.23, “One-Time Inspection of ASME Code Class 1 Small-Bore Piping” is a new program that will be consistent with the program elements in GALL Report AMP XI.M35, “One-Time Inspection of ASME Code Class 1 Small-Bore Piping.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “weld,” “cracking,” “crack,” “failure,” “socket,” “socket,” “weldolet,” “butt weld,” “thermal,” “fatigue,” and “leakage.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XIM35	Program Basis Document, "One-Time Inspection of ASME Code Class 1 Small-Bore Piping"	Revision 0 05/15/14
2. ER-AA-330-012	ASME Code Class 1 Small-Bore Piping Aging Management Program	Revision 0
3. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
4. ER-AA-330-002	Inservice Inspection of Section XI Welds and Components	Revision 11
5. AR00311917	Pressure Boundary Leakage Noted during VT-2	03/12/2005
6. LER-50-374/2005-002	Pressure Boundary Leakage Discovered in 2D MSIV Drain Line Weld during Refueling Outage VT-2 Examination	05/04/2005
7. LS-AA-125-1003	Apparent Cause Evaluation, Title: "Pressure Boundary Leakage at Weld Joint between 2b21-F028D and Line 2Ms20AD-2"	Revision 5 4/14/2005
8. WO 00789955	Work Order Package, "Leak at Line 2MS20AD-2 at Valve 2B21-F028D"	03/13/2005
9. EPRI IR-2011-465	EPRI Internal Report, "Mockup and UT Probe Design for Volumetric Examination of Small Bore Socket-to-Pipe Welds"	04/2011
10. AR00311917	Action Request, "Pressure Boundary Leakage Noted during VT-2"	03/12/2005
11. AR01358847	Action Request, "Inspection of 2B21-N040 Thermowell"	04/26/2012

During the audit of program elements one through six, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

For the "detection of aging effects" program element, sufficient information was not available to determine whether it was consistent with the corresponding program element of the GALL Report AMP. In order to obtain the information necessary to verify whether this program element is consistent with the corresponding program element of the GALL Report AMP, the staff will consider issuing RAIs for the subjects discussed below.

GALL Report AMP XI.M35 states under the "detection of aging effects" program element that "[t]his inspection should be performed at a sufficient number of locations to ensure an adequate sample. This number, or sample size, is based on susceptibility, inspectability, dose considerations, operating experience, and limiting locations of the total population of ASME Code Class 1 small-bore piping locations." LRA Sections B.2.1.23 and A.2.1.23 do not provide the total number of in-scope small-bore piping welds. The LRA does not provide the weld populations. It is not clear to the staff how the inspection sample will be selected and thus whether a sufficient number of locations will be inspected to ensure that cracking will be adequately managed.

GALL Report AMP XI.M35 also states under the "detection of aging effects" program element that the One-Time Inspection program does not apply to plants that have experienced cracking in ASME Code Class 1 small-bore piping due to stress corrosion, cyclical (including thermal, mechanical, and vibration fatigue) loading, or thermal stratification and thermal turbulence. LRA Section B.2.1.23 states that LSCS Units 1 and 2 have not experienced this type of cracking. However, the LRA also states that the applicant's review identified two issues with

ASME Code Class 1 small-bore piping welds during the startup of LSCS Unit 1 in 1983. The LRA further states that a pinhole leak was identified on a LSCS Unit 2 ASME Code Class 1 small-bore socket weld in 2005. The LRA states that the pinhole leak was caused by an inclusion or defect in a repair weld performed in 1995. Based on the staff's review of the available information, the staff determined that the documented failures were most likely age related and caused by either vibration or thermal fatigue, or both. Given the documented history of multiple failures of socket welds, it is not clear to the staff why the applicant has determined that a one-time inspection of its socket weld population would be consistent with the guidance provided in the GALL Report AMP XI.M35.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M35. The staff also identified certain aspects of the "detection of aging effects" program element of the LRA AMP for which additional information and evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.24, External Surfaces Monitoring of Mechanical Components

Summary of Information in the Application. The LRA states that AMP B.2.1.24, "External Surfaces Monitoring of Mechanical Components," is a new program that will be consistent with the program elements in GALL Report AMP X.M36, "External Surfaces Monitoring of Mechanical Components," as modified by LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation," and LR-ISG-2013-01, "Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-Scope Piping, Piping Components, Heat Exchangers, and Tanks," dated November 14, 2014. To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant's staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant's operating experience database using keywords: "tank," "external," "leak," "leakage," "insulation," and "pinhole."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M36	Program Basis Document – External Surfaces Monitoring of Mechanical Components	Revision 1
2. AR00917000	Leaking SA Valve Corroding Other Components	05/06/2009
3. ER-AA-470	External Surfaces Monitoring of Mechanical Components Aging Management Program	Revision 6
5. LA-700-402-10041	External Surfaces Monitoring of Mechanical Components Aging Management Program, Implementing Procedure	Revision 0

The staff conducted its audit of LRA program elements one through six based on the contents of the program. During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff determined that the operating experience provided by the applicant and identified by the staff’s independent database search is bounded by industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description to be consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M36.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.25, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components

Summary of Information in the Application. The LRA states that AMP B.2.1.25, “Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components,” is a new condition monitoring program that directs visual inspections of internal surfaces of components be performed during system inspections and walkdowns that will be consistent with the program elements in GALL Report AMP XI.M38, “Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components,” as modified by LR-ISG-2012-02. To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “condenser,” “internal,” “leak,” “duct,” “heat transfer,” and “fouling.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M38	Program Basis Document – Inspection of Internal Surfaces in Miscellaneous Piping and Ducting	Revision 2
2. IR 331050	Heating Coils Identified as Dirty and in Need of Cleaning	05/02/2005
3. AR00924179	Drain Plug on North End of Condenser Housing Corroded	05/27/2009
4. ER-AA-700-403	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP	Revision 0
5. ER-LA-700-403-1003	Planner's Guide to Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP	Revision 0

The staff conducted its audit of LRA program elements one through six based on the contents of the new program. During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff determined that the operating experience provided by the applicant and identified by the staff's independent database search is bounded by industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). The applicant provided three cases of plant-specific operating experience relevant to the program. In each case, the applicant inspected internal surfaces of components when accessible. When indications were detected, the applicant entered the issues into the Corrective Action Program and followed site procedures in addressing the issues. The cases provided examples indicating that the applicant's site procedures and the new program under development will be effective in detecting and managing aging through the inspection of the internal surfaces of its components. The staff also determined that the operating experience provided by the applicant and identified by the staff's independent database search is sufficient to allow the staff to verify that the LRA AMP, as implemented by the applicant, is sufficient to detect and manage the effects of aging.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description to be consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M38.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.26, Lubricating Oil Analysis

Summary of Information in the Application. The LRA states that AMP B.2.1.26, “Lubricating Oil Analysis,” is an existing program that is consistent with the program elements in GALL Report AMP XI.M39, “Lubricating Oil Analysis.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “lube,” “oil analysis,” and “lubricating analysis.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M39	Program Basis Document	Revision 1
2. MA-AA-716-006	Control of Lubricants Program	Revision 10
3. MA-AA-716-230	Predictive Maintenance Program	Revision 9
4. MA-AA-716-230-1001	Oil Analysis Interpretation Guidelines	Revision 17
5. MA-LA-716-230-1104	Lubricant Sampling Administrative Guidelines	Revision 0
6. AR00797419	Action Report: Oil Change on 0IS01G as a Results of Oil Analysis	07/17/2008
7. AR01545542	Action Report: Oil Analysis Indicates Increasing Wear Trend in 0VE04CB	08/12/2013
8. AR00933123	Action Report: Oil Analysis Indicates an Increase in Aluminum	06/19/2009
9. AR00851019	Action Report: Oil Analysis Indicates Increase Wear Metal in Compressor	12/01/2008
10. AR00236842	Action Reports: Equipment Lubricating	07/17/2004

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and

trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M39.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.27, Monitoring of Neutron-Absorbing Materials Other Than Boraflex

Summary of Information in the Application. The LRA states that AMP B.2.1.27, “Monitoring of Neutron-Absorbing Materials Other Than Boraflex,” is an existing program with an enhancement that is consistent with the program elements in GALL Report AMP XI.M40, “Monitoring of Neutron-Absorbing Materials Other Than Boraflex.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancement will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “Boral,” “spent fuel pool,” and “Netco inserts.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.M40	Monitoring of Neutron-Absorbing Materials Other Than Boraflex	Revision 0 05/25/2014
2. AR01479416	During L2R14 FS#2 Netco Insert Came Out with Fuel Bundle	10/16/2014
3. NET-235-01	Inspection and Testing of Boral Surveillance Coupon from the LaSalle County Unit 1 Station	Revision 0 05/06/2004
4. NET-332-01	Inspection and Testing of Boral and Fast Start Surveillance Coupons from the LaSalle County Units 1 and 2 Station	Revision 0, 09/10/2009
5. SEP 235-01	Procedure for Measuring and Recording Boral Surveillance Coupon Physical Attributes	Revision 0 04/05/2004
6. NET-300054-01	Inspection and Testing of Fast Start Surveillance Coupons F22-F11 from the LaSalle County Unit 2 Station	Revision 0 01/17/2013
7. AR01479416	During L2R14 FS#2 Netco Insert Came Out with Fuel Bundle	
8. AR00203737	Improper Closure of WO 589754	
9. AR00230578	Error in GE U2 Spent Fuel Pool Criticality Analysis	
10. AR00855496	Perform Fast Start Coupon Removal and Shipment	
11. AR01162523	Unit 2 Spent Fuel Pool FME from Netco Insert Tool	
12. AR01241530	Positive Control of Netco Rack Inserts	
13. AR01275817	Unit 2 Refuel Bridge Mono Hoist Use for Netco Rack Inserts	

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancement.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M40.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.28, Buried and Underground Piping

Summary of Information in the Application. The LRA states that AMP B.2.1.28, “Buried and Underground Piping,” is an existing program with enhancements that is consistent with the program elements in GALL Report AMP XI.M41, “Buried and Underground Piping and Tanks,” as modified by LR-ISG-2011-03, “Changes to the Generic Aging Lessons Learned (GALL) Report, Revision 2, Aging Management Program (AMP) XI.M41, ‘Buried and Underground Piping and Tanks.’” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff identified an exception to the GALL Report AMP and reviewed the enhancements associated with this AMP. The exception and enhancements are evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted a walkdown of underground piping in the lake screen house. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “buried,” “coat,” “damage,” “holiday,” “leak,” “mic,” “min wall,” “perforat,” “pit,” “through wall,” “underground,” “vault,” and “wrap.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LR-PBD-AMP XI.M41	Program Basis Document, Buried and Underground Pipe GALL Program XI.M41 Buried and Underground Piping and Tanks	Revision 2
2. AM 4103-535476	Long Range Guided Wave Ultrasonic Pipe Screening Results 2 DG05A-4" Line Excavation #7	11/20/2013
3. NUCC 2013109.00	Evacuation No. 7 Condition Assessment Excavated Buried Pipe	11/12/2013
4. AR01580474	IEMA Questions on LaSalle Minimum Wall Issues	11/03/2013
5. AR02449566	L2R15-U1 Found Line 2DG05A Degraded Condition	02/09/2015
6. NA	Long Range Guided Wave Ultrasonic Pipe Screening Results 2DO88A-3", 1DO88A-3" 1DO87A-3", 2CY11A-8"	06/29/2010
7. J2533	Concrete Structures Work LaSalle County Station Units 1 and 2 Commonwealth Edison Company	04/01/1975
8. NA	2013 Cathodic Protection System Resurvey Report	08/2013
9. NA	2014 Cathodic Protection System Resurvey Report	10/2014
10. NA	Program Heath Report – Buried Piping and Raw Water Corrosion Program	1st Quarter 2013 3rd Quarter 2014
11. NA	Subsurface Soil Analysis To Support the LaSalle County Generating Station Underground Buried Pipe and Tanks Inspection Initiative	01/24/2014
12. M-17	General Arrangement Section "E-E" & "F-F" EDG Day Tanks	08/10/2001
13. NUCC 20111111.00	Condition Assessment Excavated Pipe – Excavations 1, 2, and 3	01/07/2012
14. WO 01451570	PMO 00161240 Perform Annual Cathodic Protection Survey	04/18/2012
15. LS-MSS-2.3-F	Standard Specification for Protective Coatings for Buried Piping	08/07/1989
16. T-3763	Mechanical and Structural Specification Maintenance/Modification Work [Backfill]	03/20/1987
17. 006889 45	Clean and Recoat CSCS Bypass Line in LSH	10/24/2007
18. WO 01431445-04	Excavation No. 2 (RI) As-Found Visual Inspection Report	07/01/2011
19. WO 01444511	As-Found Buried Piping Visual Inspection Report Excavation 3A	09/27/2011
20. WO 01479617	CSCS As-Found Buried Piping Visual Inspection Report	03/15/2012
21. NUCC 2012115.00	Condition Assessment Excavation Buried Pipe Excavation 5	04/25/2012
22. WO 01479618-02	Ultrasonic Thickness Results 3" DO Piping	04/30/2012
23. NUCC 2013109.00	Buried Pipe Evaluations Conducted in Excavation 7	10/21/2013
24. 2-DO-6	Piping Isometric Day Tank Piping	Revision A
25. NUCC 2103109.00	Evaluation Report Conducted Pipe Evaluations in Excavation 6	07/25/2014
26. LER 85-027-01	Letter to the NRC, Reportable Occurrence Report #85-027-01	04/23/1986
27. CR-01576362	Degradation Observed during Ultrasonic Inspection of 2DG05A	10/24/2013
28. CR 01580752	WE Required for Extent of Condition Inspections on DG (CSCS)	11/04/2013
29. AM 870-325261-PIMSI	1RI30C-4", 2RI30C-4", 1RI16A-8", 2RI16A-8"	07/15/2011
30. WO 01431445-04	As-found Buried Pipe Inspection Report	07/01/2011
31. M-766	Outdoor Piping	Revision AC

Document	Title	Revision / Date
32. M0-1-87-095, MO-2-87-082	Reactor Core Isolation Cooling [RCIC] Piping Modification	06/02/1992
33. LS-PDT-140	Piping Design Tables	01/15/1987
34. 1R130C, 1R116A	Passport Tags for RCIC Modification	12/18/1996
35. M-0727-05	Systems Materials Analysis Department Report on Buried High Pressure Core Spray Line Failure LaSalle County Station Unit 1	03/03/1986

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. The “detection of aging effects” program element of the LRA AMP states that soil corrosion probes might be used to verify the effectiveness of the cathodic protection system during annual surveys. The GALL Report recommends the conduct of a cathodic protection survey using either a -850 millivolts (mV) relative to a copper sulfate electrode instant off criterion or a 100-mV minimum polarization criterion to assess the effectiveness of a cathodic protection system. Although the applicant did not cite an exception for its use of soil resistance probes, these statements are not consistent because corrosion probes use a method (actual measurement of potential loss of material in the monitored component) that is different from cathodic protection surveys. The staff’s evaluation of this exception will be documented in the SER. The staff also verified that aspects of the “detection of aging effects” program element that were not associated with the exception identified by the staff during the audit are consistent with the corresponding program elements in the GALL Report AMP. In addition, the staff found that for the “detection of aging effects” program element, sufficient information was not available to determine whether it was consistent with the corresponding program elements of the GALL Report AMP. In order to obtain the information necessary to verify whether this program element is consistent with the corresponding program elements of the GALL Report AMP, the staff will consider issuing RAIs for the subject discussed below.

- The applicant stated an acceptance criterion of 1 thousandth of an inch (mil) per year associated with the use of soil corrosion probes. Although the 1-mil-per-year acceptance criterion is a standard industry value used to demonstrate an effective cathodic protection system, the staff lacked sufficient information to conclude that there is reasonable assurance that all buried in-scope piping would be capable of meeting its current licensing basis intended function with 60 mils of corrosion that could occur through the end of the period of extended operation.

During the audit, the staff made the following observations:

- Specification LS-MSS-2.3-F allows the use of an extruded inert plastic coating, X-TRU-COAT Amstead, installed by PLEXCO on ferritic steel pipe. The specification includes requirements to steel shot clean the pipe, apply an 8- to 10-mil hot-applied thermoplastic adhesive, apply a final extruded plastic coat based on pipe diameter up to 40 mils, and conduct an electrical inspection of the final coating.
- Drawing 2-DO-6 shows that there is ASTM A106 Grade B piping embedded in concrete between the diesel fuel oil day tank and the diesel. During the preparations for the audit,

the staff noted that UFSAR Section 9.5.4.4 states that “components and piping, except for interconnecting piping between the day tanks and the diesel skids which is encased in the diesel room floor, are accessible for visual inspection.” LRA Table 3.3.2-8 cites carbon steel piping and piping components exposed internally to fuel oil.

LRA Table 3.3.2-8 does not cite any AMR items for carbon steel piping and piping components exposed to concrete. During the audit, the applicant stated that it used a spaces approach to bound the environments in Table 3.3.2-8 and concluded that uncontrolled indoor air was the appropriate bounding environment for items located in the diesel rooms. The staff concluded that the concrete environment is not bounded by the uncontrolled indoor air. The staff noted that GALL Report item AP-282 states that there is no aging effect requiring management (AERM) and no recommended AMP for steel piping and piping components exposed to concrete, as long as (1) attributes of the concrete are consistent with American Concrete Institute (ACI)-318 or ACI-349 (low water-to-cement ratio, low permeability, and adequate air entrainment), as cited in NUREG-1557, “Summary of Technical Information and Agreements from Nuclear Management and Resource Council Industry Reports Addressing License Renewal,” issued October 1996, and (2) plant operating experience indicates no degradation of the concrete. The staff also noted that LRA Section 3.5.2.2.2.1 and UFSAR Table 3.8-2 state that concrete structures were constructed to ACI-318. The staff did not find any plant-specific operating experience associated with concrete degradation that would admit water to this embedded piping and that the piping is embedded in concrete between two internal elevations in the diesel room. The staff will not pursue an RAI associated with LRA Table 3.3.2-8 not citing the piping embedded in concrete because there is no recommended AERM and no recommended AMP for the material and environment combination.

- The Subsurface Soil Analysis to Support the LaSalle County Generating Station Underground Buried Pipe and Tanks Inspection Initiative states that the groundwater level is approximately 6 feet below grade except in one location where it is 10 feet below grade. The 10 feet below grade location is influenced by a nearby well.
- Materials Analysis Report M-0727-86 states the following in relation to a buried high-pressure core spray piping leak:
 - (a) the piping was 14-inch schedule 10; (b) two welds had through-wall leaks; (c) the piping was buried 14 feet below grade; (d) the apparent cause was microbiological corrosion due to iron oxidizing bacteria; (e) the welds had been field coated with a black asphalt mastic coating with very little of the coating remaining attached to the welds; (f) shop-applied coatings were intact; (g) the pitting attack appeared to originate on the external surface in the vicinity of the intersection of the longitudinal weld and circumferential welds; (h) no chemical or bacterial analysis was conducted due to the contamination of the piping; (i) microscopic examination revealed that there was a preferential attack of the delta ferrite phase of the weld metal; and (j) the cathodic protection system was not functional for long periods of time.
- Modification documents, M0-1-87-095 and MO-2-87-082, state that the high pressure core spray system piping, which was the subject of LER 85-027-01, was abandoned in-place, and reactor core isolation cooling lines were re-routed with new piping.

Drawing M-766 states that the RCIC piping is at plant elevation 705 feet. UFSAR Section 1.2.2.1.4 states that the plant elevation at grade is 710 feet.

- Piping Standard LS-PDT-140 and Passport Tags 1R130C and 1R116A state that Piping Design Table 140 was used for the RCIC modification. The standard states that the RCIC piping is stainless steel seamless schedule 40-type 304 piping. The fittings are seamless ASTM A403 Grade WP304 material.
- Inspection Report AM870-325261-PIMSI states that there are no indications of internal or external corrosion on the 4-inch and 8-inch RCIC lines of Units 1 and 2 based on guided wave inspections. The guided wave inspections inspected from 101 feet to 135 feet of each of the piping segments, encompassing a total of 19 welds and 4 elbows. One weld was exposed for visual inspection. Inspection Report WO 01431445-04 stated that the coatings on all four RCIC lines were in excellent condition. Based on the drawings provided in AM870-325261-PIMSI, approximately 15 feet of piping was exposed for coating inspection.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant was bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). The staff reviewed LER 85-027-01, which describes a significant leak in a buried portion of the high pressure core spray system. The staff’s evaluation of this plant-specific operating experience will be documented in the SER.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M41, as modified by LR-ISG-2011-03. The staff also verified that for the “detection of aging effects” program element, the aspects of the LRA AMP program element not associated with the exception are consistent with the corresponding program element in GALL Report AMP XI.M41, as modified by LR-ISG-2011-03. The staff’s evaluation of aspects of the program element associated with the exception will be addressed in the SER. The staff also identified certain aspects of the “detection of aging effects” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.29, ASME Section XI, Subsection IWE

Summary of Information in the Application. The LRA states that AMP B.2.1.29, “ASME Section XI, Subsection IWE,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.S1, “ASME Section XI, Subsection IWE.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not

resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant's staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant's operating experience database using keywords: "crack," "drywell," "corrosion," and "rust."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S1	Program Basis Document, Revision 1, ASME Section XI, Subsection IWE	Revision 1 12/17/14
2. LAS03.G03	LaSalle County Nuclear Power Station Units 1 & 2, ISI Program Plan, Third 10-Year Inspection Interval	Revision 2 8/10/12
3. LAS03.G04	LaSalle County Nuclear Power Station Units 1 & 2, ISI Classification Basis Document, Third 10-Year Inspection Interval	Revision 2 8/10/12
4. ER-AA-330-007	Exelon Nuclear, Visual Examination of Section XI Class MC Surfaces and Class CC Liners	Revision 8
5. MA-MW-736-600	Exelon Nuclear, Torqueing and Tightening of Bolted Connections	Revision 5
6. ER-AA-335-018	Exelon Generation, Visual Examination of ASME IWE Class MC and Metallic Liners of IWL Class CC Components	Revision 9
7. ER-AA-330-009	Exelon Generation, ASME Section XI Repair/Replacement Program	Revision 7
8. AR00464187	Pits Observed in Drywell Containment Liner	06/12/2008
9. WO 01561820	Work Order 01561820	12/12/2013
10. AR00737028	Degraded Coating Observed in the Suppression Pool	06/20/2008
11. AR00602378	Water Dripping from Top 3 Tendons on East Side of Reactor Building Containment	04/16/2007
12. AR01038312	Missing Coating on Drywell Liner 740' Elevation	04/2/2010
13. AR02420888	Unit 2 Reactor Cavity Skirt Plate To Drain Line Leakage	12/04/2014
14. AR02447966	Leak Identified on Reactor Cavity Wall	02/05/2015
15. PES-S-010	Fasteners	Revision 0

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the "scope of program," "preventive actions," "parameters monitored or inspected," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that for the "detection of aging effects" program element, sufficient information was not available to determine whether it was consistent with the corresponding program element of the GALL Report AMP. In order to obtain the information necessary to

verify whether this program element is consistent with the corresponding program element of the GALL Report AMP, the staff will consider issuing an RAI for the subject discussed below.

- The “detection of aging effects” program element of the LRA AMP notes that IWE pressure boundary surfaces, including containment sleeves and associated welds, are subject to Appendix J to 10 CFR Part 50 tests in addition to visual IWE examinations. The GALL Report AMP recommends the program be augmented to require surface examination, in addition to visual examination, to detect cracking in stainless steel penetration sleeves and dissimilar metal welds. The GALL Report further states that, where feasible, Appendix J tests may be performed in lieu of the surface examination. It is not clear to the staff that these statements are consistent because the LRA does not clearly state whether the applicant will conduct surface examinations or will perform Appendix J testing instead. If the applicant will perform Appendix J testing, the LRA does not specify the type of testing or explain why the testing is appropriate to detect cracking.

The LRA AMP provides an enhancement to the “preventive actions” program element to include proper guidance for bolting material selection and installation. The associated GALL Report element identifies several industry documents that should be referenced on bolting material and installation. During the audit, the staff reviewed the AMP program basis document and the existing procedures and verified that the necessary references were either already included in the existing procedures or were clearly identified in the program basis document to be added to the procedures before the period of extended operation.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing an RAI for the subject discussed below.

- The LRA discusses leakage from the reactor cavity pool and provides an enhancement to the “monitoring and trending” element to perform periodic ultrasonic thickness (UT) measurements of the containment liner in the vicinity of the leakage. During the audit, the staff reviewed documentation that shows leakage manifesting in a different location from where it has been historically identified. The staff will consider issuing an RAI to understand how the existing enhancement will address the plant-specific operating experience associated with reactor cavity leakage.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S1. The staff’s evaluation of aspects of the program elements associated with enhancements will be addressed in the SER. The staff also identified certain aspects of the “detection of aging effects” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff found that additional information is required before a determination can be made regarding whether the applicant’s operating experience supports the sufficiency of the LRA AMP. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.30, ASME Section XI, Subsection IWL

Summary of Information in the Application. The LRA states that AMP B.2.1.30, “ASME Section XI, Subsection IWL,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.S2, “ASME Section XI, Subsection IWL.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the containment exterior concrete. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “containment,” “crack,” “drywell” and “leach.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S2	Program Basis Document, Revision 1, ASME Section XI, Subsection IWL	Revision 1 12/17/2014
2. ER-AA-330-005	Exelon Generation, Visual Examination of Section XI Class CC Concrete Containment Structures	Revision 10
3. ER-AA-330-006	Exelon Nuclear, Inservice Inspection and Testing of the Pre-Stressed Concrete Containment Post-Tensioning Systems	Revision 7
4. LAS03.G04	LaSalle County Nuclear Power Station Units 1 & 2, ISI Classification Basis Document, Third 10-Year Inspection Interval	Revision 2 08/10/2012
5. ER-AA-335-019	Exelon Nuclear, Visual Examination of ASME IWL Class CC Containment Components	Revision 0
6. LAS03.G05	LaSalle County Nuclear Power Station Units 1 & 2, ISI Selection Document, Third 10-Year Inspection Interval	Revision 1 3/31/11
7. LAS03.G03	LaSalle County Nuclear Power Station Units 1 & 2, ISI Program Plan, Third 10-Year Inspection Interval	Revision 2 08/10/2012
8. AR00157920	Degraded Tendon	04/21/2008
9. AR00302924	Water Leaks Observed on U2 RB Concrete Containment Wall	02/18/2005
10. AR02441090	U1 Tendon Tunnel Walkdown Results and Actions Needed	01/22/2015
11. WO 01444757-01	Visual ISI of U1 Containment Post-Tensioning Tendons	09/09/2014
12. WO 01413307-01	Exterior Containment Concrete Surface Inspection	09/23/2014
13. AR02439871	IWL Concrete Acceptance Criteria Not Established in Procedure	01/20/2015

Document	Title	Revision / Date
14. AR01658189	Upper B Tendon Inspection Needed	05/09/2014

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). In order to obtain the information necessary to determine whether the applicant’s operating experience supports the sufficiency of the LRA AMP, the staff will consider issuing an RAI for the subject discussed below.

- The LRA discusses leakage from the reactor cavity pool that migrates through the containment concrete. The LRA provides an enhancement to monitor the thickness of the containment liner; however, the LRA does not discuss the impact of the leakage on the concrete.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S2.

Based on this audit, the staff also found that additional information is required before a determination can be made regarding whether the applicant’s operating experience supports the sufficiency of the LRA AMP. In addition, the staff verified the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.31, ASME Section XI, Subsection IWF

Summary of Information in the Application. The LRA states that AMP B.2.1.31, “ASME Section XI, Subsection IWF,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP X1.S3, “ASME Section XI, Subsection IWF.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of Unit 1 Diesel Generator Building (DG1A Room) and Unit 1 Auxiliary Building (Core Standby Cooling System [CSCS] Pump Room). The staff also conducted an independent search of the

applicant's operating experience database using keywords: "loss of material," "torque," "preload," "corrosion," "support," "lubrite," and "vibration isolator."

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-XI.S3	Program Basis Document – ASME Section XI, Subsection IWF	Revision 4 04/09/2015
2. ER-AA-330	Conduct of Inservice Inspection Activities	Revision 10
3. ER-AA-330-003	Inservice Inspection of Section XI Component Supports	Revision 9
4. ER-AA-330-004	Visual Examination of Snubbers	Revision 9
5. ER-AA-335-001	Qualification and Certification of Nondestructive Examination (NDE) Personnel	Revision 6
6. ER-AA-335-016	VT-3 Visual Examination of Component Supports, Attachments, and Interiors of Reactor Vessels	Revision 9
7. ER-AA-330-009	ASME Section XI Repair/Replacement Program	Revision 7
8. LAS03.G03	ISI Program Plan – Third 10-Year Inspection Interval, LaSalle County Station Units 1 & 2	Revision 3 10/09/2014
9. LAS03.G04	ISI Classification Basis Document – Third 10-Year Inspection Interval, LaSalle County Station Units 1 & 2	Revision 3 10/09/2014
10. LAS03.G05	ISI Selection Document – Third 10-Year Inspection Interval, LaSalle County Station Units 1 & 2	Revision 2 10/09/2014
11. PES-S-010	Fasteners (Procurement Engineering Standards)	Revision 0 09/15/2003
12. MA-MW-736-600	Torqueing and Tightening of Bolted Connections (Procedure)	Revision 5
13. CC-AA-102	Design Inputs and Configuration Change Impact Screening	Revision 27
14. PES-S-003	In-storage Maintenance of Nuclear Material	Revision 8 09/03/2011
15. WO 00934604	ISI – Mechanical Component Supports VT-3 & 4 (Component Reactor Vessel Skirt; Procedure ER-AA-335-016, Revision 4)	Revision 1 02/26/2008
16. WO 01421353	ISI – Mechanical Component Supports VT-3&4 (Procedure ER-AA-330-003, Visual)	Revision 01 01/14/2013
17. RA13-023	Post-Outage 90-Day ISI Summary Report	05/31/2013
18. RA14-018	Post-Outage 90-Day ISI Summary Report	05/29/2014
19. AR01662773	Revise Documents To Include Supports for Vacuum Breaker Line	05/21/2014
20. AR01477092	Loose Clamp Bolting on 2RI24-2813X (Rigid Seismic Restraint)	02/19/2013
21. AR01475671	Spherical Bearing Dislodged from Strut Paddle	02/15/2013
22. AR01475099	Loose Clamp Bolting on 2RI24-2854X (Rigid Seismic Restraint)	02/14/2013
23. WO 1519995	Work Order To Repair Snubbers Bearings Clamps Issues and Loose Pipe Clamp Bolt Discovered during ISI	02/19/2013
24. AR1330091	Loose Pipe Clamp Bolting on 1FW02-1055S	02/22/2012

Document	Title	Revision / Date
25. WO 1517389	Tighten Loose Load Nuts on Support 1FW02-102V	02/29/2012
26. AR1358830	Lessons Learned from 1R14	04/26/2012
27. AR01333134	SH Chiller Primary Loop Suction Header Piping Support Broken (Weld Broken, Repair)	02/28/2012
28. AR01038394	Piping Clamp Bolt Loose on RR Line Snubber Unit 1 (Repair)	03/04/2010
29. AR00196514	1VR05YB Damper Actuator Mounting Support Broken Bolt	01/20/2004
30. AR00141196	Cracked Support Braces in Main Condenser Hotwell Area (Unit 1 - Repair)	01/26/2003
31. AR00601184	Spring Can Found Pinned for Hanger M09-DH00-2002V (U2 - Unpin)	03/08/2007

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that for the “preventive actions” program element, sufficient information was not available for Enhancement 1 (LR Commitment No. 31, item 1) to determine whether it was consistent with the corresponding program elements of the GALL Report AMP. In order to verify that the enhancement will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing an RAI for the subject discussed below.

- The LRA AMP states an enhancement (Commitment No. 31, item 1) to the “preventive action” program element that will be implemented before the period of extended operation to become consistent with the corresponding GALL Report AMP program element. The enhancement states:

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 measures in the corresponding program element in the GALL Report AMP include a recommendation for using bolting material that has an actual measured yield strength less than 150 kilopounds per square inch (ksi) or 1,034 megapascal (MPa). Given that the LRA AMP does not include provisions for the GALL Report-recommended supplemental volumetric examination to detect SCC on the basis 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 LSCS IWF supports, it is not clear to the staff whether these statements are consistent

because the enhancement does not prevent the future use of such high strength bolting material considered susceptible to SCC.

During the audit, the staff reviewed the program basis document LA-PBD-XI.S3, Revision 4, and associated implementing procedures and made the following observations:

- The LRA AMP provides an enhancement to the “preventive action” program element to include guidance for proper specification of bolting material selection, installation torque or tension, storage, and lubricants and sealants to prevent or mitigate degradation and failure of structural bolting. The associated GALL Report element identifies several industry documents (i.e., EPRI NP-5769, EPRI TR-104213, and NUREG-1339) that should be referenced to address these preventive actions. During the audit, the staff noted that Section 3.2, “Preventive Actions,” of the LRA AMP program basis document states, in part:

The applicable preventive action recommendations addressed within EPRI TR-104213 and NUREG-1339 for the proper selection of bolting material, lubricants and installation torque and tension to prevent and minimize loss of bolting preload and cracking of high strength bolting are addressed in existing station implementing procedures. For bolted connections, the program also relies on the design change procedures that will be enhanced to address EPRI NP-5769, EPRI TR-104213, and NUREG-1339 guidance to ensure proper specification of bolting material, lubricant and sealants, and installation torque or tension to prevent or mitigate degradation and failure of structural bolting. The implementing maintenance procedures will be enhanced to include EPRI NP-5769 as a referenced document. Station procedures, specifications and drawings provide replacement tightening (torque) consistent with EPRI guidelines and American Institute of Steel Construction (AISC) specifications, as applicable.

The statements above confirm that the necessary references were either already included in the existing procedures or were clearly identified in the program basis document to be added to the procedures before the period of extended operation.

- The staff noted that Section 3.2, “Preventive Actions,” of the program basis document states, in part, “Structural bolting is received with a light coating of oil, and installed without additional lubricant. Additional thread lubricant is generally used on mechanical joints such as pipe flanges, however, additional thread lubricant is typically not used for IWF support structural bolting.” The staff notes that this statement provides a reasonable indication that molybdenum disulfide or other lubricants have not been used for bolting in IWF supports at LSCS.
- The staff noted that in Section 3.4, “Detection of Aging Effects,” of the program basis document, the applicant made the following statement to justify why it did not perform supplemental volumetric examination, in addition to VT-3 examination, as recommended in the GALL Report AMP 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 to detect cracking:

High strength bolts susceptible to SCC [stress corrosion cracking] are not used in IWF supports at LaSalle. 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 IWF supports. Plant-specific operating experience has not identified cracking or SCC for high strength bolts used in IWF supports at LaSalle..... IWF supports at LaSalle do not use high strength bolts requiring volumetric examination. LaSalle IWF supports do utilize ASTM A325 bolts, however ASTM A490 and ASTM F1852 bolts were not used for IWF supports. In order for SCC to occur in high strength bolting, three parameters must exist; (1) a corrosive environment, (2) a susceptible material, and (3) high sustained tensile stresses. All the parameters required for susceptibility and cracking to occur due to SCC are not present in the bolting material used at LaSalle for IWF supports.

Section 3.2, "Preventive Actions," and Section 3.3, "Parameters Monitored or Inspected," of the program basis document also include similar statements. The staff notes that these statements confirm that high strength bolting material susceptible to SCC, as recommended in the GALL Report (i.e., bolting with 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 LSCS IWF supports. These statements provide supporting justification for waiving the recommended supplementary volumetric examination for such high strength bolting.

- The staff noted that Section 3.1, "Scope of Program"; Section 3.3, "Parameters Monitored or Inspected"; Section 3.4, "Detection of Aging Effects"; and Section 3.6, "Acceptance Criteria," of the program basis document state, "Supports within the scope of ASME Section XI, Subsection IWF do not have elastomeric vibration elements at LaSalle." This statement justifies why the LRA AMP did not include provisions for supplementary examination of elastomeric vibration isolation elements by feel, as recommended in the GALL Report AMP, to detect hardening that may affect its vibration isolation function.

During the audit of the "operating experience" program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR, noting that the staff previously identified a need for additional information on Enhancement 1 (Commitment No. 31, item 1), which is also part of the UFSAR supplement description, for which the staff will consider issuing an RAI as described previously.

Audit Results. Based on this audit, the staff verified that the "scope of program," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S3. The staff's evaluation of aspects of the program elements associated with enhancements will be addressed in the SER. The staff also identified

certain aspects of the “preventive actions” program element, associated with Enhancement 1 (Commitment No. 31, item 1), of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR, noting that the staff identified a need for additional information related to Enhancement 1 (Commitment No. 31, item 1), which is also part of the UFSAR supplement description.

LRA AMP B.2.1.32, 10 CFR Part 50, Appendix J

Summary of Information in the Application. The LRA states that AMP B.2.1.32, “10 CFR Part 50, Appendix J,” is an existing program that is consistent with the program elements in GALL Report AMP XI.S4, “10 CFR Part 50, Appendix J.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “appendix,” “leak,” and “integrated.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S4	Program Basis Document, Revision 0, 10 CFR Part 50, Appendix J	Revision 0 04/02/2014
2. ER-AA-380	Primary Containment Leakrate Testing Program	Revision 10
3. LTS-300-5	Primary Containment Leakrate Testing Program	Revision 40 05/24/2011
4. LTS-300-4	Unit 1(2) Primary Containment Integrated Leak Rate Test (ILRT)	Revision 27 08/20/2009
5. LTS-600-3	Primary Containment Inspection	Revision 12 11/24/2010
6. AR01328655	LLRT on 1VQ34/35 Exceeds Admin Alarm Limit L1R14	02/18/2012
7. AR1598086 (NOSA-LAS-14-08)	Inservice Inspection, Inservice Testing, and Appendix J Audit Report	09/17/2014
8. AR01473899	LLRT Exceeds Alarm Limit 2B21-F016/F019	02/11/2013
9. 2008-2	Integrated Leakage Rate Test Final Report – LaSalle Nuclear Power Plant Unit 1	04/12/2008
10. AR01622486	L1R15 1E12-F008 LLRT Exceeded As-Found Alarm Limit	02/17/2014

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging

effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the applicant provided a list of containment penetrations that are exempt from Appendix J testing, along with the AMPs that will manage aging of those penetrations during the period of extended operation. The staff reviewed the list and verified that all of the listed penetrations were within the scope of appropriate AMPs.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S4.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.33, Masonry Walls

Summary of Information in the Application. The LRA states that AMP B.2.1.33, “Masonry Walls,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.S5, “Masonry Walls.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements are evaluated in the SER. The LRA also states that this program is implemented as part of the Structures Monitoring Program described in LRA Sections A.2.1.34 and B.2.1.34.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the Unit 1 Diesel Generator Building (DG-1A Room), Unit 1 Auxiliary Building (Core Standby Cooling System (CSCS) Pump Room, Cable Spread Room, Division 1 Switchgear Room, and Battery Room), and Unit 1 Turbine Building Bay. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “masonry,” “block,” “crack,” “grout,” “mortar,” “CMU,” and “wall.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S5	Program Basis Document: Masonry Walls (GALL Program XI.S5 – Masonry Walls)	Revision 1 12/12/2014
2. LA-PBD-AMP-XI.S6	Program Basis Document: Structures Monitoring (GALL Program XI.S6 – Structures Monitoring)	Revision 3 09/04/2014
3. LA-PBD-AMP-XI.M26	Program Basis Document: Fire Protection (GALL Program XI.M26 – Fire Protection)	Revision 1 09/24/2014
4. ER-LA-450-1006, Section 1.3	LaSalle Structures Monitoring Instructions (Section 1.3 Program Scope, Includes Masonry Walls)	Revision 0
5. ER-AA-450	Structures Monitoring (Section 1.3 – Scope; Attachment 2 - Examination Criteria, Item 3; Attachment 7, S03 –Sample Structural Examination Checklists)	Revision 3
6. PI-AA-125	Corrective Action Program (CP) Procedure - Attachment #3	Revision 2
7. OP-AA-108-115	Operability Determinations, Section 2.14 - Operability Evaluation	Revision 11
8. CC-AA-309-101	Engineering Technical Evaluations, Section 1.2.2	Revision 13
9. CC-AA-406	Maintenance Specification: General Structural Installations into Concrete Walls	Revision 4
10. LAP-400-24	Documentation of Attachments to Safety Related Concrete Masonry Walls	Revision 0 06/11/2004
11. AR00253085	Upper Blocks of Removable Wall Loose	09/15/2004
12. AR00234403	Evaluation of LaSalle 6/28/2004 Seismic Event	07/07/2004
13. AR01183328	U2 AEER – Small Divot in Grout – East Wall	03/04/2011
14. NA	Masonry Walls Program Results Book (AMP B.2.1.33)	03/2015

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements (Commitment No. 33, items 1 and 2).

During the audit, the staff verified that the “scope of program,” “preventive actions,” “detection of aging effects,” and “monitoring and trending” program elements of the LRA are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that for the “parameters monitored or inspected” and “acceptance criteria” program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL Report AMP. In order to verify that the enhancements applicable to these program elements will make the AMP adequate to manage the applicable aging effects, staff will consider issuing an RAI for the subject discussed below.

- The LRA AMP states an enhancement to the “parameters monitored or inspected” and “acceptance criteria” program elements in order to become consistent with the GALL Report. The enhancement (Enhancement 1, Commitment No. 33, item 1) states that, before the period of extended operation, the program will be revised to “provide guidance for inspection of masonry walls for separation, and for gaps between the supports for masonry walls.” The “parameters monitored or inspected” program element of the GALL Report AMP XI.S5 states, “The 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.” It is not clear to the staff that these statements are consistent because, with regard to monitoring for gaps, the parameter monitored, as well as the corresponding acceptance criteria in the GALL Report AMP program elements, relate to “gaps between the supports *and* masonry walls,” which appears to be different from the parameter, “gaps between supports *for* masonry walls,” in the LRA AMP. The staff will consider issuing an RAI to allow the applicant to address this potential inconsistency in the characterization of the “gaps between supports...” parameter monitored such that the enhancement will be adequate to establish consistency with the “parameters monitored or inspected” and “acceptance criteria” program elements of the GALL Report.

During the audit, the staff made the following observations:

- The staff noted that the applicant’s program basis document for Structures Monitoring lists the 2002 version of ACI 349.3R-02, “Evaluation of Existing Nuclear Safety-Related Concrete Structures,” as program reference 4.2.4. Because the Masonry Walls Program is implemented as part of the Structures Monitoring Program, Enhancement 2 (Commitment No. 33, item 2) to the Masonry Walls Program, as it relates to personnel qualifications, will be based on the 2002 version of ACI 349.3R-02, which is consistent with the version of ACI 349.3R referenced in the GALL Report AMP XI.S6.
- The staff also noted that the applicant uses Procedure LAP-400-24 to control modifications, additional attachments, penetrations, upgrades, and reclassification of safety-related masonry walls. The applicant’s use of this procedure indicates that it has administrative controls in place to ensure that the evaluation basis of masonry walls is not invalidated by one or more of the following: physical modifications, upgrades, or reclassification.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified that this description is consistent with the description provided in the SRP-LR, noting that the staff identified an inconsistency related to the wording of Enhancement 1 (Commitment No. 33, item 1), which is also part of the UFSAR supplement, for which the staff will consider issuing an RAI as described previously.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “detection of aging effects,” and “monitoring and trending,” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S5. The staff also identified certain aspects of the “parameters monitored or inspected,” and “acceptance criteria” program elements, associated with Enhancement 1 (Commitment No. 33, item 1), of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the

description provided in the SRP-LR, noting that the staff identified a need for additional information related to the wording of Enhancement 1 (Commitment No. 33, item 1), which is also part of the UFSAR supplement.

LRA AMP B.2.1.34, Structures Monitoring

Summary of Information in the Application. The LRA states that AMP B.2.1.34, “Structures Monitoring,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.S6, “Structures Monitoring.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the system auxiliary transformer pads, the exterior of the Unit 2 side of the turbine building, auxiliary building and reactor building, the two condensate storage tank foundation pads, the interior of the Unit 1 turbine building, Unit 1 auxiliary building, Unit 1 diesel generator building, reactor building, spent fuel pool, and exterior of the Unit 1 primary containment. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “leach,” “leak,” “crack,” “spall,” “freeze,” “thaw,” “concrete,” “degrade,” “corrosion,” “groundwater,” and “settlement.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S6	Program Basis Document for LaSalle Unit 1 and 2 Structures Monitoring	Revision 3
2. ER-LA-450-1006	LaSalle Structures Monitoring Instructions	Revision 0
3. ER-AA-450	Structures Monitoring	Revision 3
4. Not Available	Structures Monitoring Program Walkdown Report	1999-2004 (varies)
5. MA-MW-736-600	Torquing and Tightening of Bolted Connections	Revision 5
6. PES-S-003	In-Storage Maintenance of Nuclear Material	Revision 7
7. PES-S-010	Fasteners	Revision 0
8. AR0969080	Pipe Support Degradation in Lower Level of Screen House	09/23/2009
9. AR0167187	Evaluate the Collective Issue with Concrete Spalling and Cracking Identified in IR	08/19/2014
10. AR2486288	Misrepresentative Concrete Temperature Noted in SMP HD Room Report	04/16/2015
11. AR1083729	Water Leaking from Exterior Concrete Wall to 754" TB Floor	06/23/2010
12. AR0163168	Exposed Reinforcing Bar Observed in the Concrete Base Mat (Tendon Tunnel Roof)	06/13/2003

Document	Title	Revision / Date
13. AR2485498	Minor Wall Seepage at LSH (EL. 683) above OWS015A Valve	04/15/2015
14. N/A	Structures Monitoring Program Results Book (AMP B.2.1.34)	03/2015

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements (Commitment No. 34, items 1 through 9).

During the audit, the staff verified that the “scope of program,” “preventive actions,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that for the “parameters monitored or inspected” and “detection of aging effects” program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL Report AMP. In order to verify that the enhancements will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing RAIs for the subjects discussed below.

- The LRA AMP states an enhancement to the “detection of aging effects” program element (Enhancement 7, Commitment No. 34, item 7) intended to augment the existing program for inaccessible below-grade concrete structural elements exposed to nonaggressive groundwater/soil in order to become consistent with the GALL Report recommendations. The enhancement states that for in-scope structures, representative samples of the exposed portions of the below-grade concrete will be examined when excavated for any reason. The GALL Report AMP recommends the following for plants with nonaggressive groundwater/soil: (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. It is not clear to the staff that this program element is consistent because the LRA AMP only addresses item (b) of the GALL Report recommendations.
- The LRA AMP states an enhancement to the “scope of program” program element (Enhancement 1, Commitment No. 34, item 1). The enhancement states that, before the period of extended operation, the components and commodities listed, which included, among others, the component type “permanent drywell shielding,” will be added to the scope of the program. LRA Table 3.5.2-7 notes, on LRA page 3.5-160, that this component includes blanket covers of material “fiberglass,” which will be inspected by the Structures Monitoring program for rips and tears, and lists the AERM as “change in material properties.” The GALL Report AMP does not provide recommendations for managing the aging effects of fiberglass blanket covers of shielding components, nor did the applicant provide additional enhancements to the “parameters monitored or inspected,” “detection of aging effects,” and “acceptance criteria” program elements. It is not clear to the staff that the enhancement provided to the LRA AMP is sufficient to adequately address the “detection of aging effects,” “parameters monitored or inspected,” and “acceptance criteria” program elements for the “permanent drywell shielding” component added to the scope of the program.

During the audit, the staff made the following observations:

- The LRA AMP provides an enhancement to the “preventive actions” program element (Enhancement 2, Commitment No. 34, item 2) to include guidance for proper specification of bolting material, lubricant, and installation torque or tension to ensure bolting integrity. The associated GALL Report provision identifies several industry documents that should be included in the program on bolting material, lubricants, and installation. During the audit, the staff reviewed the AMP program basis document and the existing procedures and verified that the necessary references were either already included in the existing procedures or were clearly identified in the program basis document to be added to the procedures before the period of extended operation.
- The staff noted that the “detection of aging effects” program element of the LRA AMP does not include the GALL Report recommendation to perform visual inspections supplemented by feel to detect hardening in elastomeric vibration isolation elements if the function is suspect. During the audit, the staff noted that the applicant does not use elastomeric vibration isolation elements at LSCS. The staff reviewed the AMP program basis document, associated references, and site operating experience and verified that the applicant does not use any elastomeric vibration isolation elements at the plant. The staff did not observe or identify the use of elastomeric vibration isolation elements during the audit review.
- During the staff’s independent review of site operating experience, the staff noted that the report entitled, “Structures Monitoring Program Walkdown Report” (1999 to 2004), identifies degradations (cracks) on the turbine building concrete slab in the area immediately surrounding the four heater drain pumps (1HDO1PA,B,C,D). In the report (Sections T-2001 and T-2002), the degradation was attributed to elevated temperatures imposed by the heater drain pumps to the concrete. During the audit, the staff also reviewed AR2486288, which states that the maximum concrete temperature measured during the walkdown was 169 °F at one of the pumps with the Unit at 100-percent power. AR2486288 further explains that the design provides intervening thermal barriers (air gap and steel surface liner) to provide insulation from the pump bowl (with temperatures of 300 °F, as obtained from system surveillance).

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S6. The staff’s evaluation of aspects of the program element associated with enhancements will be addressed in the SER. The staff also identified certain aspects of the “parameters monitored or inspected,” “detection of aging effects,” and “acceptance criteria” program elements of the LRA AMP for which additional information or additional evaluation is required before consistency with the GALL Report or adequacy of enhancement that expands program scope can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.35, RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants

Summary of Information in the Application. The LRA states that AMP B.2.1.35, “RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.S7, “RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER. The LRA also states that this program is implemented as part of the Structures Monitoring Program described in LRA Sections A.2.1.34 and B.2.1.34.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the lake screen house, cooling lake, and intake flume (including the earthen walls, south flume concrete retaining wall, and north flume sheet piling retaining wall). The staff also conducted an independent search of the applicant’s operating experience database using keywords: “leach,” “leak,” “crack,” “spall,” “freeze,” “thaw,” “concrete,” “degrade,” “corrosion,” “groundwater,” and “settlement.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S7	Program Basis Document for LaSalle Units 1 and 2 RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants AMP	Revision 3
2. ER-LA-450-1006	LaSalle Structures Monitoring Instructions	Revision 0
3. ER-AA-450	Structures Monitoring	Revision 3
4. SA-AA-117	Excavation, Trenching, and Shoring	Revision 16
5. Not Available	Structures Monitoring Program Walkdown Report	1999-2004 (Varies)
6. 2013-LAS-336	Annual Field Surveillance Report (September 2013)	Revision 0
7. AR2385063	Annual Major Dike Inspection Findings: 2014	09/23/2014
8. AR2473898	Structural Monitoring Incomplete for 2009-2014 Cycle	03/25/2015
9. AR0530632	Clean and Recoat CSCS Line in LSH	10/24/2007
10. AR2485498	Minor Wall Seepage at LSH (EL. 683) above OWS015A Valve	04/15/2015
11. N/A	RG 1.127 Program Results Book (AMP B.2.1.35)	03/2015

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements (Commitment No. 35, items 1 through 6).

During the audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In order to verify that the enhancements will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing an RAI for the subject discussed below.

- The LRA AMP states an enhancement to the “scope of program” program element. The enhancement states that the existing program and procedures will be enhanced to include 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) where the “shad net anchors” are attached are subject to aging management; however, these structures were not included as part of the LRA enhancement to the “scope of program” program element. The staff is concerned that by not clearly describing the different material components associated with the “shad net anchors” structure, the RG 1.127 program might not adequately manage the aging effects of in-scope components associated with the water-control structures.

During the audit, the staff made the following observation:

- During the audit, the staff noted that Section 2.1, item (c), of the LRA AMP basis document states that the LSCS cooling lake embankment (dike) is classified as a dam by the State of Illinois and that it complies with the regulatory requirements in Section 17 IAC 3702.30(C) of the State regulations. The “program description” section of the GALL Report AMP XI.S7 states that, for dam inspection and maintenance programs that do not fall under the regulatory jurisdiction of the Federal Energy Regulatory Commission (FERC) or the U.S. Army Corps of Engineers (USACE), the effectiveness of the AMP is evaluated based on compatibility to common practices of the FERC and USACE programs. However, Section 3.3, item (b) of LRA AMP basis document clarifies that “the earthen embankments (dikes) surrounding the cooling lake are not in-scope for license renewal,” and Section 3.4.3 of the LRA AMP basis document further explains that that “failure of the cooling lake embankment and internal dikes (including the discharge structure and discharge flume) does not affect any [license renewal] intended function and does not affect the ultimate heat sink.”

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S7. The staff also identified certain aspects of the “scope of

program” program element of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.36, Protective Coating Monitoring and Maintenance Program

Summary of Information in the Application. The LRA states that AMP B.2.1.36, “Protective Coating Monitoring and Maintenance Program,” is an existing program that is consistent with the program elements in GALL Report AMP XI.S8, “Protective Coating Monitoring and Maintenance Program.” To verify this claim of consistency, the staff audited the LRA AMP.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “coating,” “torus,” and “Service Level I.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.S8	Protective Coating Monitoring and Maintenance Program	Revision 0 05/25/2014
2. WO 01427974	Inspect Unit 2 Primary Containment Drywell Coatings L02-CI-1-PC-Inspect	
3. WO 01426644	Apply Service Level I Coating to Pipe Cap and Blind in Drywell	
4. WO 00899457	IWE Surf./Bolt Exam of DW HD., Skirt, Wall Liner, L01PC-VT3-WLKDN-02S	
5. AR737028	Degraded Coating Observed in Supp. Pool	
6. WO 1113904	IWE Surf./Bolt Exam of DW HD., Skirt, Wall Liner, L01PC-VT3-WLKDN-02S	
7. WO 1315656	Missing Coating on Drywell Liner 740' to 760' Elevations	
8. AR1038312	Missing Coating on Drywell Liner 740' Elevation	
9. AR1038314	Missing Coating on Drywell Liner 777' Elevation	
10. AR00737028	Degraded Coating Observed in the Supp. Pool	
11. AR01197921	Apply Service Level I Coating to Pipe Cap in Drywell	
12. AR00604587	Load Binders in Drywell Per EC362872	
13. ER-AA-330-008	Exelon Service Level I, and Safety-related (Service Level III) Protective Coatings	Revision 9
14. Specification T-3763	Mechanical and Structural Work Specification Maintenance/Modification Work	

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.S8.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.37, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Information in the Application. The LRA states that AMP B.2.1.37, “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements,” is a new program that will be consistent with the program elements in GALL Report AMP XI.E1, “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed all the documents necessary to implement this new program, and the staff’s audit addressed only the LRA AMP, the applicant’s basis document, operating experience, and draft implementing procedures.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted reviews of the applicant’s corrective actions, work orders, draft implementation procedures, walkdown documentation, and surveillance documentation. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cable,” “jacket,” “cracked,” “thermal,” “connection,” “contamination,” “discoloration,” “swelling,” and “moisture.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.E1	Program Basis Document - Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Revision 1 N/A
2. MAA-AA-723-500	Inspection of Non EQ Cables and Connection for Managing Adverse Localized Environments	Revision 6 N/A
3. ER-AA-300-150	Cable Condition Monitoring Program	Revision 0 N/A
4. AR00092281	Damaged Cables in Unit 1 Heater Bay	Revision N/A 01/25/2002
5. AR01514258	Engineering Cable Program Walkdown Results – 1B TDRFP (Unit 1 Auxiliary Building Turbine Driven Reactor Feed Pump B)	Revision A N/A 05/15/2013
6. AR01514267	Engineering Cable Program Walkdown Results – 1A TDRFP (Unit 1 Auxiliary Building Turbine Driven Reactor Feed Pump A)	Revision N/A 05/15/2013
7. AR01548187	Engineering Program Finding (Cable Tray Points 43A (1WP) and 43B (1WC) and Cable Tray Points 63A (2WP) and 62A (2WP). Water Appears To Have Been Coming through the Conduit Sleeves onto the Cable Trays).	Revision N/A 08/19/2013
8. ER-AA-3003	Cables in Adverse Localized Environments (ALEs) – Area Walkdowns	Revision N/A 2012-2013
9. AR01622637	Engineering Cable Program Walkdown Finding -1B21-F013F	Revision N/A 02/18/2014
10. AR01628707	1D CD/CB Pump Tripped	Revision N/A 03/03/2014

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR. The staff also noted that the applicant committed to implement the new “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements” AMP before the period of extended operation (Commitment No. 37) for managing the effects of aging for applicable components.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.E1.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the

staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.38, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits.

Summary of Information in the Application. The LRA states that AMP B.2.1.38, “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits,” is a new program that will be consistent with the program elements in GALL Report AMP XI.E2, “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed all the documents necessary to implement this new program, and the staff’s audit addressed only the LRA AMP, the applicant’s basis document, operating experience, and draft implementation procedures.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “connection,” “radiation monitor,” “SRM,” “IRM,” “LPRM,” “standby gas,” “stack,” “cable,” and “connector.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.E2	Program Basis Document – Insulation Material for Electrical Cables and Connections Not Subject to 19 CFR 50.49 Environment Qualification Requirements Used in Instrumentation Circuits	Revision 0 05/13/2014
2. AR01033311	SRM A Insulation Shield to Ground is Degraded	Revision N/A 02/20/2010
3. WO 01248911	LPRM High Shield to Ground Resistance Problems	Revision N/A 10/12/2015
4. LIP-NR-510	Unit 1 LPRM Plots – Instrument Maintenance Procedure (Markup)	Revision 15 02/07/2014
5. LIP-NR-511	Unit 1 SRM Detector Plot I/V Plots – Instrument Maintenance Procedure (Markup)	Revision 7 11/01/2005
6. LIP-MS	Unit 1 Main Steam Line Radiation Monitor Calibration – Instrument Maintenance Procedure (Markup)	Revision 7 03/10/2010
7. AR01507469	RM-2A and 2E IRM Spike – Half Scram	Revision N/A 04/28/2013
8. AR009978385	Spiking Indication on U-2 G IRM Caused Half Scram	Revision N/A 10/13/2009
9. AR02447653	RM – Spike on A, B, and D SRMS	Revision N/A 02/04/2015

Document	Title	Revision / Date
10. AR00555126	LPRM 24-57B Drifting	Revision N/A 11/08/2006

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR. The staff also noted that the applicant committed to implement the new “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits” AMP before the period of extended operation (Commitment No. 38) for managing the effects of component aging.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.E2.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.39, Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Information in the Application. The LRA states that AMP B.2.1.39, “Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements,” is a new condition monitoring program that will be consistent with the program elements in GALL Report AMP XI.E3, “Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed all the documents necessary to implement this new program, and the staff’s audit addressed only the applicant’s existing basis document, operating experience, and draft implementing procedures.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted reviews of the corrective actions, planned modifications to add automatic sump pumps (manholes 3 and 4), manhole inspections, cable condition monitoring test results, inspection photographs of in-scope manholes 3, 4, 5, and 6, and draft implementation procedures. Additionally, the staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cable,” “manhole,” “vault,” “submergence”, and “jacket.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.E3	Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	Revision 1
2. RS-07-067	Response to NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients"	05/07/2007
3. RS-07-156	Response to Request for Additional Information (RAI) Regarding Resolution of NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients"	12/07/2007
4. LRA Appendix B	LRA AMP B.2.1.39, Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	12/09/2014
5. LRA Appendix A	Updated Final Safety Analysis Report Supplement - Section A.2.1.39	12/09/2014
6. LRA Appendix A	Updated Final Safety Analysis Report Supplement - Table A5 – Commitment 39 - Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	12/09/2014
7. AR00591281	NRC GL-2007-01 Input Provide Site-Specific Input to GL Response Lead for Requested Information Items 1 and 2	04/05/2007
8. AR00760587	SEN 272 Follow-up – Evaluate Submerged Cables in Response to the Corporate SME's Review of SEN 272, as Documented in Assignment 1, Identify and Evaluate Submerged Electrical Cables per the Review Template in the In-Progress Notes	08/18/2008
9. AR01056715	NER NC-10-008-Y-Action #9 Long-Term Plan - Develop Long-Term Action Plans To Address Cables Routed in Underground Structures	12/01/2010
10. ER-AA-300-150	Cable Condition Monitoring Program	Revision 0
11. WO 01692338	Manhole Inspection and Pumping if Required	N/A
12. WC-AA-120	Attachment 2 - PM Change Review Form Page 1 of 2	Revision 1
13. OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	Revision 12
14. AR01622264	Panel Alarming – OPL-MH5	05/27/2014
15. AR00956848	LaSalle Assessment Deficiency - Manhole Inspections/Pump	05/27/2014
16. AR01126512	Inspection of Cables in Underground Vaults (Manholes 3, 4, 5, and 6)	01/20/2015
17. LSCS AMP Activities Summary	Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (B.2.1.39)	N/A
18. ER-AA-300-150	Attachment 1 – Pumping Criteria and Long-Term Wetting Definition	Revision 0a
19. ER-AA-300-150	Attachment 3 – License Renewal, Inaccessible Power Cable Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program (CM-2)	Revision 0
20. AR02474626	Engineering Cable Vault Walkdown	03/26/2015
21. EC 389576	Design Consideration Summary	Revision 001

Document	Title	Revision / Date
22. EC 389576	Work Planning Instruction: Install Automatic Sump Pumps in Underground Cable Vaults (Manholes 5 and 6)	Revision 1
23. AR00336085	Water in Cable Vaults	5/16/2005
24. WO 1068947-04	Replace Old Feed Cable Splices in Manholes (Manholes 5 and 6) (Cable 2WS013)	N/A
25. WO 1399932	Power Cable to 0WS02PA	Revision 0 01/2012
26. WO 17221870	MH 1/2/3/4/5/6, Manhole and Inspection and Pumping if Required	Revision 0 08/2014
27. PMID 187009	Model Work Order 1692338, MH-1/2/3/4/5/6 Manhole Inspection and Pumping if Required (MHs 1 & 2 Not In Scope of AMP)	N/A
28. IE-1-3685	Cable Routing Outdoor Area	Revision 2

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the staff made the following observations:

- The staff reviewed in-scope medium-voltage test results for the years 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, and 2014 and noted that all tests showed satisfactory results. In addition, the staff reviewed the applicant’s GL-2007-01 responses for inaccessible power cables and more recent inaccessible cable operating history noting that the applicant did not identify any inaccessible power cable failures.

A review of LRA AMP Results Book WO 01721870, MH-1/2/3/4/5/6, identified recent inspections of in-scope manholes 3, 4, 5, and 6 that found water in manholes 3 and 4. Manholes 5 and 6 have sump pumps installed and showed no water. Based on the water collection history for manholes 3 and 4, the applicant has implemented an engineering change to install sump pumps in manholes 3 and 4.

- LA-PBD-AMP-XI.E3 did not specifically address inspection of structural (electrical) support members in electrical manholes. The staff reviewed the applicant’s Structures Monitoring basis document and confirmed that this program includes enhancements for the inspection of electrical support members, electrical cable trays, electrical duct banks, and electrical manholes.
- In its review of basis document LA-PBD-AMP-X1.E3, the staff noted that for program element “preventive actions,” the applicant provided an apparent revision to the element’s preventive actions criteria. GALL Report AMP XI.E3 states that “cables/splice and cable support structures are intact and dewatering/drainage systems (i.e., sump pumps) and associated alarms operate properly.” The applicant revised the “cables/splices and cable support structures are intact” portion of the program element in the basis document, AMP summary document, and the draft implementation work order to read as follows: “The inspection will include direct observation to assure cables are not wetted or submerged, cables and connections are intact without observable surface

damage, cable support structures are intact, and drainage systems and dewatering devices and associated alarms are operating properly.”

However, LRA AMP B.2.1.39 and the UFSAR summary do not reflect this change. The staff reviewed the applicant’s revised element discussion and concluded that the applicant’s change is a clarification of the GALL Report AMP XI.E3 inaccessible power cable/splice and support structure visual inspection guidance. Therefore, LRA AMP B.2.1.39 and the UFSAR summary remain consistent with GALL Report AMP XI.E3 program element “preventive actions” without exception or enhancement.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR. The staff also noted that the applicant committed to implement the new “Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements” AMP before the period of extended operation (Commitment No. 39) for managing the effects of aging for applicable components.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.E3.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.40, Metal Enclosed Bus

Summary of Information in the Application. The LRA states that AMP B.2.1.40 “Metal Enclosed Bus,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.E4, “Metal Enclosed Bus.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff’s audit addressed only the program elements described in the applicant’s basis document.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the in-scope portions of the metal enclosed bus (MEB) and associated station auxiliary transformers SAT142 and SAT242, Unit 1 emergency switchgear room, and diesel generator DG0. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “bus,” “connections,” “loose connections,” “insulators,” “metal enclosed bus,” and “non-segregated bus.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.E4	Metal Enclosed Bus, GALL Program XI.E4 - Metal Enclosed Bus	Revision 1 12/05/2014
2. LEP-AP-101	Unit 1 Non-Segregated Phase Bus Duct Preventive Maintenance Inspection	Revision 16
3. AR00734244	1E MPT Isophase Bus B Phase Duct Insulator Broken	01/11/2008
4. AR00825284	NER NC-08-046 LaSalle Isophase Insulator Failure	10/01/2008
5. AR00989226	SER 5-09 Non-Segregated Bus Failure and Complicated Scram (Evaluation of an Event That Occurred at Another Site)	11/05/2009
6. AR0091049	142Y to 242Y Unit Tie Bus Duct Inspection	03/09/2004
7. AR01406889	SAT Non-Segregated Bus Duct Bolted Connections	09/29/2012
8. AR02435014	Difficult to Access Segments of Non-Segregated Bus Provide Input to Maintenance for the Testing To Be Performed for Difficult To Access Segments of Non-Segregated Bus during the Performance of LEP-AP-101 and LEP-AP-201	06/30/2015
9. U122216	General Layout of Metal Enclosed Non-Segregated Phase Bus Duct – Drawing	Revision 6
10. L-97420	Rigid Connector Assembly 5000 Amp. 20" Gap	Revision 0
11. T-158061X22	Shop Assembly - Non-Segregated, Alum (Non-insulated) 5KV 5000 Amp 60 KV BIL – Drawing	Revision 0
12. L-974900X2	Alignment Joint Cover – Drawing	Revision 0 10/1975
13. T-158079X1	Wall Plate Non-Segregated Bus Duct 5KV 60 KV B.I.L. 5000 Amp Non-Insulated – Drawing	Revision 0 01/12/1976

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the staff made the following observations:

- The staff reviewed vendor drawings associated with transition pieces of the MEB components and verified the lack of any internal cable connections or flexible joints that may be constructed of different material or that potentially may be subject to aging mechanisms, or both, and effects other than those evaluated in the GALL Report (AMP XI.E4). These drawings are listed as items 9 through 13 in the table above.

- The staff reviewed MEB operating experience and walked down the in-scope MEB runs and did not identify MEB exterior conditions or operating experience that would indicate that the applicant should consider modifying its proposed program. In addition, the MEB condition and operating experience, including aging mechanisms and effects, appear consistent with those for which GALL Report AMP XI.E4 was evaluated.
- During the walkdown, the staff noted that the majority of the MEB segments are accessible for inspections and testing activities. However, some segments of the MEB are installed near other permanent structures where removal of the MEB enclosure covers for visual inspection and testing appear to be hindered.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). The staff’s evaluation of the applicant’s plant-specific operating experience will be addressed in the SER.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.E4. .

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.1.41, Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications Requirements

Summary of Information in the Application. The LRA states that AMP B.2.1.41, “Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications Requirements,” is a new program that will be consistent with the program elements in GALL Report AMP XI.E6, “Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications Requirements.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff’s audit addressed only the existing AMP basis documents and draft procedures for implementation of AMP B.2.1.41.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted walkdowns of the in-scope portions of the 345 kV switchyard, station auxiliary transformers SAT 142 and SAT 242, Unit 1 emergency switchgear room, and diesel generator room DG0. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cables,” “connections,” and “thermography.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff's search of the applicant's operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-XI.E6	Program Basis Document, Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications	Revision 1 12/05/2014
2. LA-AMPBD-E6	Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications – Sample Basis Document	Revision 0 Draft
3. ER-AA-300-120	Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualifications – Qualification Requirements Program	Revision 1
4. MA-AA-716-230-1003	Thermography Program Guide	Revision 4
5. LEP-GM-113	Cable Terminations	Revision 16
6. AR01544267	OSH01CC Hot Spot Identified by Thermography	09/16/2013
7. AR01524620	Thermal Anomaly Identified on 1VP01PB Contactor	07/13/2013
8. AR01520436	2A HDP Trip	04/30/2014
9. AR00641896	Thermography Identified Hot Spot in OSH01CE	07/19/2007

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff's independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff). The staff's evaluation of the identified plant-specific operating experience will be addressed in the SER.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.E6.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.2.2.1, Service Level III and Service Level III Augmented Coatings Monitoring and Maintenance Program

Summary of Information in the Application. The LRA states that AMP B.2.2.1, “Service Level III and Service Level III Augmented Coatings Monitoring and Maintenance Program,” is a new plant-specific program. The staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff’s audit addressed only plant-specific operating experience, and markups of existing plant-specific procedures annotated with potential changes to implement the new AMP. Issues identified but not resolved in this report will be addressed in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “clog,” “coat,” “damage,” “delam,” “jacket,” “lined,” “lining,” “perforat,” “holiday,” and “wrap.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-PS1	Program Basis Document - Service Level III and Service Level III Augmented Coatings Monitoring and Maintenance Program	Revision 1
2. AR00597644	2A DG [Diesel Generator] HX [Heat Exchanger] Coating Failure	03/01/2007
3. ACE 597664-02	Apparent Cause Evaluation – 2A DG Heat Exchanger Coating Failure	03/01/2007
4. AR01605964	Degraded Coating on 1WR01AA Heat Exchanger	01/08/2014
5. ER-AA-330-008	Exelon Service Level I and Safety-Related (Service Level III) Protective Coatings	Revision 9
6. LMP-RI-02	Reactor Core Isolation Cooling Turbine Maintenance	Revision 23
7. LMS-DG-01	Main Emergency Diesel Unit Surveillance	Revision 50
8. LOS-FP-R1	Transformer Deluge Test for Main Power Transformer 1E (2E) and 1W (2W)	Revision 15
9. LOS-FP-R2	Transformer Deluge Test for Unit Auxiliary Transformer 141 (241)	Revision 14
10. LOS-FP-R3	Transformer Deluge Test for System Auxiliary Transformer 142 (242)	Revision 18
11. ER-AA-340-1002	Service Water Heat Exchanger Inspection Guide	Revision 5
12. AR00972566	Documentation of 2A DG Cooler Coating Failure	09/28/2009
13. AR02382989	0DG01A HX Coating	09/18/2014
14. AR01465974	Required Flows Not Met during LOS-DG-Q2	01/23/2013
15. AR01433447	CCA [Common Cause Analysis] Needed for CSCS Low Cooling Water Flow	10/30/2012

Coincident with the applicant’s development of the LRA, the staff issued the final version of LR-ISG-2013-01, “Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-Scope Piping, Piping Components, Heat Exchangers, and Tanks,” on

November 14, 2014. The applicant used the draft version (issued for public comment on January 10, 2014) of LR-ISG-2013-01, "Aging Management of Loss of Coating Integrity for Internal Service Level III (Augmented) Coatings" (Agencywide Documents Access and Management System Accession No. ML13262A442), to develop the LRA. The staff audited the LRA program to the final version of LR-ISG-2011-03, which included a new AMP, GALL Report AMP XI.M42, "Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-Scope Piping, Piping Components, Heat Exchangers, and Tanks."

During the audit of program elements 1 through 7, the staff verified that the "preventive actions," "parameters monitored or inspected," and "monitoring and trending" program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. For the "scope of program," "detection of aging effects," "acceptance criteria," and "corrective actions" program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL Report AMP. In order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL Report AMP, the staff will consider issuing RAIs for the subjects discussed below.

- The staff noted that LRA Table 3.3.2-7, "Demineralized Water Makeup System," states that internally coated (i.e., galvanized steel) piping and piping components exposed to treated water will be managed for loss of coating integrity by the Service Level III and Service Level III Augmented Coatings Monitoring and Maintenance Program. However, the "scope of program" program element does not include the demineralized water makeup system. The staff lacks sufficient information to conclude whether the "scope of program" element or LRA Table 3.3.2-7 is correct.
- The "detection of aging effects" program element of the LRA AMP states that internal coating inspections may be omitted if the degradation of coatings cannot result in downstream effects; however, inspections are conducted if corrosion rates or inspection intervals have been based on the integrity of the coatings. In this case, as an alternative to direct internal visual inspection of the coatings, external wall thickness measurements can be performed to confirm the acceptability of the corrosion rate of the base metal. The GALL Report AMP recommends a periodicity and size of inspection for alternative wall thickness measurements, which was not included in the draft GALL Report AMP XI.M42. Specifically, the AMP recommends that wall thickness measurements be conducted every 10 years, beginning 10 years before the period of extended operation. A representative sample size is 25 percent of accessible external surfaces for heat exchangers, strainers, and tanks and 73 1-foot axial length circumferential segments for piping. In addition, the final GALL Report AMP XI.M42 recommends that the inspection grid size be the same as that for flow-accelerated corrosion inspections. It is not clear to the staff that these statements are consistent because the applicant did not include the recommended specificity in its program.
- The "acceptance criteria" and "corrective actions" program elements of the LRA AMP state the following:
 - Peeling and delamination is evaluated by a coatings specialist.
 - When coating defects are detected, visual inspections will be supplemented by additional testing as determined by the inspector as necessary to accurately assess coating condition.

- When peeling and delamination is detected, physical testing is performed, where possible (i.e., sufficient room to perform the test), if required to assess the condition of the coating.
- When blisters are detected, physical testing is conducted if required to assess the condition of the coating.
- If appropriate, corrective actions may include repair or replacement of the internal coating prior to the component being returned to service.

The Final LR-ISG-2013-01 GALL Report AMP XI.M42 recommends that indications of peeling and delamination are not acceptable, whereas the applicant stated that a coatings specialist would evaluate the condition. The applicant did not state what criteria would be used to find peeling or delamination acceptable or what actions would be taken before returning the degraded component to service. The “corrective actions” program element of LR-ISG-2013-01 GALL Report AMP XI.M42 recommends that, for indications of peeling and delamination that will be returned to service without repair and for blisters, adhesion testing should be conducted. For blisters, alternatives to adhesion testing are permitted in cases in which adhesion testing is not possible due to physical constraints. The applicant stated that physical testing would be conducted “if required.” The applicant did not state what criteria would be used to conclude that physical testing would not be required. In the absence of physical testing, it is not clear to the staff how the applicant would determine the extent of peeling, delamination, or blistering. The staff noted that the “corrective actions” program element of LR-ISG-2013-01 GALL Report AMP XI.M42 states that coatings that do not meet acceptance criteria are repaired, replaced, or removed. The staff concludes that the applicant’s statement, “if required,” implies that coatings that do not meet acceptance criteria could be returned to service without repair, replacement, or removal. The applicant did not state what criteria would be used to return coatings that do not meet acceptance criteria to service without repair.

During the audit, the staff made the following observation:

- ER-AA-330-008 states that any coating defects or precursors to coating defects shall be photographed.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “preventive actions,” “parameters monitored or inspected,” and “monitoring and trending” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M42. The staff also identified certain aspects of the “scope of program,” “detection of aging effects,” “monitoring and trending,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.3.1.1, Fatigue Monitoring

Summary of Information in the Application. The LRA states that AMP B.3.1.1, “Fatigue Monitoring,” is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP X.M1, “Fatigue Monitoring.” To verify this claim of consistency, the staff audited the LRA AMP. During the audit, the staff reviewed the enhancements associated with this AMP. The enhancements will be evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “fatigue,” “cycle,” and “cracking.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PDB-AMP-X.M1	Program Basis Document – Fatigue Monitoring	Revision 0 12/05/2014
2. ER-AA-47	Fatigue Management Program Description	Revision 0
3. ER-AA-470	Fatigue and Transient Monitoring Program	Revision 6
4. LTP-300-9	Thermal Cycle Monitoring Program Technical Procedure	Revision 15 09/23/2014
5. Results Book – AMP B.3.1.	Results Book – Fatigue Monitoring	Revision 0
6. AR01641091	LR – Fatigue Monitoring Program Cycle Count Issues	03/31/2014
7. CAR 01-97-028	Thermal Cycle Monitoring Program	03/20/1997
8. L-003921	LaSalle Unit 1 Cycle Re-Count and Cycle Projections	Revision 1
9. L-003921	LaSalle Unit 2 Cycle Re-Count and Cycle Projections	Revision 2
10. AR02391593	Thermal Cycle LTP-300-9 Counts	10/06/2014

The staff conducted its audit of LRA program elements one through six based on the contents of the existing program as modified by the proposed enhancements.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit of the “operating experience” program element, the staff determined that the operating experience provided by the applicant and identified by the staff’s independent database search is bounded by industry operating experience (e.g., no previously unknown aging effects were identified by the applicant or the staff). The applicant addressed generic communication (Regulatory Issue Summary (RIS) 2008-30, “Fatigue Analysis of Nuclear Power Plant Components,” dated December 16, 2008) and its impact on its plants. The applicant determined that the analysis methodology described in RIS 2008-30 was not used; therefore, the RIS was not applicable. The staff also determined that the operating experience provided by the applicant and identified by the staff’s independent database search is sufficient to allow the staff to verify that the LRA AMP, as implemented by the applicant, is sufficient to detect and manage the effects of aging.

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP XI.M1. The staff’s evaluation of aspects of the program elements associated with enhancements will be addressed in the SER.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.

LRA AMP B.3.1.2, Concrete Containment Tendon Prestress

Summary of Information in the Application. The LRA states that AMP B.3.1.2, “Concrete Containment Tendon Prestress,” is an existing program with an enhancement that will be consistent with the program elements in GALL Report AMP X.S1, “Concrete Containment Tendon Prestress.” To verify this claim of consistency, the staff audited the LRA AMP. Issues identified but not resolved in this report will be addressed in the SER. During the audit, the staff reviewed an enhancement associated with this AMP. The enhancement is evaluated in the SER.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. The staff also conducted an independent search of the applicant’s operating experience database using keywords: “IWL,” “concrete,” “tendon,” and “prestress.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-X.S1	Program Basis Document: Concrete Containment Tendon Prestress	Revision 1 04/09/2015

Document	Title	Revision / Date
2. ER-AA-330-006	Inservice Inspection and Testing of the Prestressed Concrete Containment Post-Tensioning Systems, Exelon Generation Procedure	Revision 7
3. LAP-100-51	Inservice Inspection Program for Post-Tensioning Tendons, LaSalle Station Unit 1, 2 and Common Administrative Procedure	Revision 8 07/10/2008
4. ER-AA-330-1002	LaSalle Station ISI Program Health Report – 1st Tri-annual Period 2014 (Color Rating White – ISI; CISI: Green (1LR15))	Revision 8
5. NOSA-LAS-14-08 (AR1598086)	Inservice Inspection, Inservice Testing, and Appendix J Audit Report, LCS, August 25–29 and September 8–12, 2014	9/17/2014
6. AR01090183	FASA ISI/Containment ISI Programs; Document FASA Report – LaSalle Station 5-Year ISI FASA (Focused on IWE and IWL)	07/13/2010 12/22/2010
7. AR00165124	Design Analysis No. L-002950 Rev 0 (Degraded Tendons)	06/26/2003
8. AR00157920	Degraded Tendon	05/08/2003
9. AR00159247	Tendon V12A Lift-off Test	05/16/2003
10. AR01658189	Upper B Tendon Inspection Needed (To Validate Critical Assumption That was Made for B tendons after the 2003 Failure Event That B Tendon Weld Covers Prevent Moisture Intrusion – Only A was Inspected in 2003)	05/09/2014
11. AR02441090	Unit 1 Tendon Tunnel Walkdown Results and Actions Needed	01/22/2015
12. L-003886	Unit 1 Containment ISI Tendon Force Regression Analysis	Revision 0 04/03/2014
13. L-003887	Unit 2 Containment ISI Tendon Force Regression Analysis	Revision 0 04/03/2014
14. L-003888	Unit 1 Containment ISI Tendon Predicted Lower Limit Forces	Revision 0 04/03/2014
15. L-003889	Unit 2 Containment ISI Tendon Predicted Lower Limit Forces	Revision 0 04/03/2014
16. NA	Concrete Containment Tendon Prestress Results Book AMP B.3.1.2	03/2015

The staff conducted its audit of LRA program elements one through seven based on the contents of the existing program as modified by the proposed enhancement. The staff notes that the scope of the audit also covered program element 7, “corrective actions,” because the program enhancement also appeared to have applicability to the “corrective actions” program element.

During the audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” and “monitoring and trending” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP. In addition, the staff found that, for the “acceptance criteria” and “corrective actions” program elements, sufficient information was not available in regard to applicability of Enhancement 1 (Commitment No. 44) to determine whether it was consistent with the corresponding program element of the GALL Report AMP. In order to verify that the enhancement will make the AMP adequate to manage the applicable aging effects, the staff will consider issuing an RAI for the subject discussed below.

- The “acceptance criteria” program element of the GALL Report AMP X.S1 states, in part, “The goal is to keep the trend line above the PLL [predicted lower limit line] 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 soon after the inspection and would not meet the requirements.” In addition, the example UFSAR supplement description in SRP-LR Table 4.5-1 for Concrete Containment Tendon Prestress TLA Evaluation, in accordance with 10 CFR 54.21(c)(1)(iii), states, in part, “If the trend lines cross the PLLs corrective actions will be taken.”

LRA AMP B.3.1.2 states an enhancement (Commitment No. 44) to the “monitoring and trending” program element that will be implemented before the period of extended operation. The enhancement states, “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.” 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) included the following statements: “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.” In addition, the staff noted that the program element description in Section 3.7, “Corrective Actions,” of the program basis document included the second statement cited above. However, Sections 3.6 and 3.7 of the program basis document indicated that these LRA AMP program elements were consistent with the corresponding GALL Report AMP program elements without any enhancement. It is not clear whether the enhancement is adequate to make the LRA AMP consistent with the GALL report AMP because the staff noted the following issues or inconsistencies: (1) LRA Section B.3.1.2 and the program basis document identify “monitoring and trending” as the only program element to which the enhancement applies but does not identify other program elements (e.g., “acceptance criteria” or “corrective actions”) to which the enhancement may need to be applied and implemented to establish consistency, (2) the wording of the above enhancement in the UFSAR supplement in LRA Section A.3.1.2 is not consistent (e.g., use of the word “*projected*” versus “*updated*”) with that in LRA Section B.3.1.2 in both the LRA and the program basis document, and (3) the program description in the UFSAR supplement in LRA Section A.3.1.2 does not appear to include a statement similar to that in SRP-LR Table 4.5-1, stated in the previous paragraph, to address the case when the trend line crosses the PLL line.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the UFSAR supplement was an adequate description of the LRA AMP. In order to obtain the information necessary to verify the sufficiency of the UFSAR supplement program description, the staff will consider issuing an RAI for the issues related to the program enhancement discussed above.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” and “monitoring and trending,” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP X.S1. The staff also identified certain aspects of the “acceptance criteria” and “corrective actions” program elements of the LRA AMP for which additional information or additional evaluation is required before consistency can be determined.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff identified a need for additional information regarding the adequacy of the program description in the UFSAR supplement.

LRA AMP B.3.1.3, Environmental Qualification (EQ) of Electric Components.

Summary of Information in the Application. The LRA states that AMP B.3.1.3, “Environmental Qualification (EQ) of Electric Components,” is a new program that will be consistent with the program elements in GALL Report AMP X.E1, “Environmental Qualification of (EQ) of Electric Components.” To verify this claim of consistency, the staff audited the LRA AMP. At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff’s audit addressed only the applicant’s existing basis document, operating experience, and draft implementing procedures.

Audit Activities. During its audit, the staff interviewed the applicant’s staff and reviewed onsite documentation provided by the applicant. In addition, the staff conducted reviews of corrective actions, work orders, draft implementation procedures, EQ program health reports, focused area self-assessment (FASA), EQ binders, and surveillance documentation. The staff also conducted an independent search of the applicant’s operating experience database using the keywords: “cable,” “jacket,” “cracked,” “thermal,” “connection,” “contamination,” “discoloration,” “swelling,” “EQ,” and “Environmental Qualification.”

The table below lists the documents that were reviewed by the staff and were found relevant to the audit. These documents were provided by the applicant or were identified in the staff’s search of the applicant’s operating experience database.

Relevant Documents Reviewed

Document	Title	Revision / Date
1. LA-PBD-AMP-X.E1	Program Basis Document Environmental Qualification (EQ) of Electric Components	Revision 0 04/15/2014
2. LSA-AA-126-1001	Attachment 1 - FASA Focused Area Self-Assessment AR1490778 – Environmental Qualification (EQ) Preventative Maintenance Requirements	Revision 7 06/16/2013
3. NES-EIC-3 0.00	Exelon EQ Binder Final Review and Release Checklist	Revision 6
4. LA-TLAABD	Time Limited Aging Analyses Basis Documents Part 1 TLAA Evaluation	Revision 0 11/28/2014
5. LA-TLAABD	Time Limited Aging Analyses Basis Documents Part 2 TLAA Evaluation	Revision 0 11/28/2014

Document	Title	Revision / Date
6. NUREG-0519 Supplement 2	Safety Evaluation Report Related to the Operation of LaSalle County Station Units 1 and 2, Docket Nos. 50-373 and 374, Commonwealth Edison Company – Appendix C Safety Evaluation of Environmental Qualification of Safety-Related Electrical Equipment	Revision Supp. 2 02/1982
8. AR01137923	Report – EQ Program	11/09/2010
9. ER-AA-1100	Program Health Report LaSalle County Station EQ Program Controlling Document: CC-AA-203	Revision 11 2014
10. ER-AA-1100	Program Health Report LaSalle County Station EQ Program Controlling Document: CC-AA-203	Revision 9 2013
11. ER-AA-1100	Program Health Report LaSalle County Station EQ Program Controlling Document: CC-AA-203	Revision 9 01/2012
12. CC-AA-203	Program Health Reports LaSalle EQ Program	01/2011
13. CC-AA-203	Program Health Reports LaSalle EQ Program	01/2010
14. AR01473793	Unit 2 Inboard MSIV Limit Switch EQ Service Life	02/11/2013

During the audit of program elements one through six, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding elements of the GALL Report AMP.

During the audit, the staff made the following observations:

- The staff reviewed the LSCS EQ program health reports covering the years 2010 through 2014 and noted that the overall program status for the reports reviewed was “green.” The reports noted that no EQ equipment failures or adverse performance trends were identified and that EQ equipment replacement and inspections were completed satisfactorily. One less than green program status was noted for the implementation cornerstone element for open EQ actions tracking items (2010, 3rd quarter). All other performance indicators were green for the periods reviewed.
- A review of the FASA, performed from May 2011, through June 2011, noted that the following three EQ standard compliance objectives were met (AR01137923):
 - (1) EQ equipment/components are installed and maintained effectively in compliance with EQ documentation.
 - (2) The EQ program interfaces with key interfacing departments to ensure the EQ equipment/components are procured, installed, and maintained per program requirements.
 - (3) EQ preventive maintenance (PM) is performed to ensure that the EQ components are properly replaced before the end of their qualified lives as established in the applicable EQ binder and station predefined data.

The self-assessment concluded that the deficiencies noted would not have prevented an EQ component from performing or meeting its design or licensing basis functional requirement. A review of the FASA report shows that for Objectives 1, 2, and 3, EQ components are maintained effectively, that no suggestions for changes or procedural

improvements were noted, and that the inspection found only minor deficiencies in preventive maintenance (component replacements).

A second FASA performed by the applicant (LSA-AA-126-1001 (AR1490778)) was tasked to confirm that EQ equipment maintenance and replacement requirements are effective. Specifically, the applicant evaluated the consistency of EQ maintenance requirements against vendor information, corporate and station maintenance programs, and operating experience. The FASA was also tasked with identifying industry best practices. The FASA report concluded that preventive maintenance is consistent with vendor information, maintenance, and operating experience and that industry best practices were noted for medium- and low-voltage motors using condition monitoring performance data to initiate maintenance.

During the audit of the “operating experience” program element, the staff’s independent database search found that the operating experience provided by the applicant is bounded by known industry operating experience (e.g., no previously unknown or recurring aging effects were identified by the applicant or staff).

The staff also audited the description of the LRA AMP provided in the UFSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

Audit Results. Based on this audit, the staff verified that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” and “acceptance criteria” program elements of the LRA AMP are consistent with the corresponding program elements in GALL Report AMP X.E1.

Based on this audit, the staff also verified that the operating experience at the plant is bounded by the operating experience for which the GALL Report program was evaluated. In addition, the staff verified that the description provided in the UFSAR supplement is consistent with the description provided in the SRP-LR.