UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
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April 5, 2021

Mr. David Rhoades
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION – POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL (PHASE I) REPORT 05000374/2021010

Dear Mr. Rhoades:

On March 5, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at LaSalle County Station and discussed the results of this inspection with Ms. A. McMartin, Engineering Director, and other members of your staff. The results of this inspection are documented in the enclosed report.

Three findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at LaSalle County Station.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at LaSalle County Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Ann Marie J. Stone, Chief
Engineering Branch 1
Division of Reactor Safety

Docket No. 05000374
License No. NPF-18

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to David Rhoades from Ann Marie J. Stone dated April 5, 2021.

SUBJECT: LASALLE COUNTY STATION – POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL (PHASE I) REPORT 05000374/2021010

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000374
License Number:	NPF-18
Report Number:	05000374/2021010
Enterprise Identifier:	I-2021-010-0028
Licensee:	Exelon Generation Company, LLC
Facility:	LaSalle County Station
Location:	Marseilles, IL
Inspection Dates:	February 22, 2021 to March 05, 2021
Inspectors:	M. Holmberg, Senior Reactor Inspector L. Torres, Nuclear Safety Engineer - Division of Nuclear Safety Illinois Emergency Management Agency
Approved By:	Ann Marie J. Stone, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Post-Approval Site Inspection for License Renewal (Phase I) at LaSalle County Station, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Inadequate Examination of Valve 2FP-136 to Support the Selective Leaching Aging Management Program			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000374/2021010-01 Open/Closed	[H.5] - Work Management	71003
The inspectors identified a Green finding for the licensee's failure to complete a hardness test or mechanical test of the internal surface of material within valve 2FP136 and retard chamber drain plug. These tests were necessary to identify selective leaching and to ensure the intended function of the fire protection system valve 2FP136 would be maintained consistent with the current licensing basis through the period of extended operation.			

2B High Pressure Core Spray Diesel Generator Lube Oil Cooler Restricted Tubes Not Removed from Service			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000374/2021010-03 Open/Closed	[H.14] - Conservative Bias	71003
The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow procedure ER-AA-335-1006 "Heat Exchanger Electromagnetic Testing Methodology" in support of the Open-Cycle Cooling Water System aging management program. Specifically, the licensee did not adhere to the procedure and install tube plugs in three restricted tubes within the 2B high pressure core spray (HPCS) diesel generator (DG) heat exchanger (HX) or generate an issue report (IR) and these actions were necessary to assure that the intended function of the 2B HPCS DG HX would be maintained consistent with the current licensing basis through the period of extended operation.			

Inadequate Examination of 2DG01A Diesel Generator Heat Exchanger Tubes to Support the Selective Leaching Aging Management Program			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000374/2021010-02 Open/Closed	[H.5] - Work Management	71003
The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to apply a			

procedure appropriate to the circumstances for examination of the 2DG01A diesel generator (DG) jacket water heat exchanger (HX) tubes for the intended application (detection of selective leaching). Specifically, the licensee did not include instructions for a visual examination coupled with hardness tests or other mechanical tests of the degraded HX tube material necessary to determine if selective leaching had occurred and necessary to ensure the intended function of 2DG01A HX would be maintained consistent with the current licensing basis through the period of extended operation.

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the Coronavirus Disease (COVID-19), regional inspectors were directed to begin telework. During this time regional baseline inspections were evaluated to determine if all or portions of the objectives and requirements stated in the IP could be performed remotely. In some cases, portions of an IP were completed remotely and on-site. This inspection is conducted in phases; therefore, the inspectors completed portions of the objectives and requirements which could be completed remotely. The onsite portions will be completed during later phases of this inspection.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

71003 - Post-Approval Site Inspection for License Renewal

Post-Approval Site Inspection for License Renewal (1 Sample)

(1) The inspectors conducted a Phase 1 license renewal inspection. The following aging management programs (AMPs) were evaluated by the inspectors:

- Boiling Water Reactor (BWR) Vessel Internals (Commitment Item 9)
  - The inspectors performed review of licensee actions associated with changes to a BWR Vessel Program Enhancement as identified in Assignment Report (AR) 04334088 "LaSalle Updated Final Safety Analysis (UFSAR) Update for BWRVIP-25 Revision 1."
  - The inspectors performed review of an ultrasonic examination report for the horizontal core shroud weld (H-4) completed during the 2015 Unit 2 outage.

- Aboveground Metallic Tanks (Commitment Item 18)
  - The inspectors performed review of records from a sample of completed inspections. This records review included licensee inspections of the interior surfaces of the U1 cycled condensate (CY) tank completed on June 5, 2020, and external surfaces of the U1 and U2 CY tanks completed in May 26, 2020.

- Selective Leaching (Commitment Item 22)
  - The inspectors performed review of records from a sample of completed inspections. This records review included licensee inspections of the 2DG01A heat exchanger (HX) tubes completed on November 19, 2019, and valve 2FP136 with retard chamber drain plug internal surfaces completed on November 25, 2020.

- Service Level III and Service Level III Augmented Coatings Monitoring and Maintenance Program (Commitment Item 42)
    - The inspectors performed review of records from a sample of completed internal coating inspections. This records review included licensee inspections of:
        - The 2DG01A HX water box end coatings completed on November 19, 2019;
        - The 2B High Pressure Core Spray (HPCS) Diesel Generator (DG) HX water box end coatings completed on June 26, 2020;
        - The 2WR01AB HX internal coatings completed on March 23, 2020;
        - The 2WR01AA HX internal coatings completed on June 19, 2020; and
        - The 0DG01F internal cooling water strainer coating completed on February 28, 2021.

INSPECTION RESULTS

Inadequate Examination of Valve 2FP-136 to Support the Selective Leaching Aging Management Program			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000374/2021010-01 Open/Closed	[H.5] - Work Management	71003

The inspectors identified a Green finding for the licensee's failure to complete a hardness test or mechanical test of the internal surface of material within valve 2FP136 and retard chamber drain plug. These tests were necessary to identify selective leaching and to ensure the intended function of the fire protection system valve 2FP136 would be maintained consistent with the current licensing basis through the period of extended operation.

Description:

As described in the UFSAR Appendix P Section A.2.1.22, the Selective Leaching AMP is a new condition monitoring program that includes one-time visual inspections of a representative sample of susceptible components within the scope of license renewal. These one-time inspections include visual examinations, coupled with either hardness measurement or other mechanical examination techniques such as destructive testing, scraping, or chipping, of selected components that may be susceptible to selective leaching. This inspection is conducted to determine whether loss of material due to selective leaching is occurring, and whether the process will affect the ability of the components to perform their intended function for the period of extended operation.

To implement this program, the licensee issued procedure ER-LA-700-401-1001 "Guidance for Performing Selective Leaching Inspections" which included visual examinations and hardness or mechanical tests to identify evidence of selective leaching for susceptible materials. Specifically, Step 4.3.3 of ER-LA-700-401-1001 stated "If hardness testing cannot be performed, PERFORM alternate mechanical examination techniques such as chipping or scraping to determine if selective leaching has occurred. The purpose of mechanical techniques is to remove surface material to reveal a visual indication of selective leaching below the surface. Industry operating experience indicates that when selective leaching

occurs, it leaves behind a porous material consisting of graphite, voids and rust (graphitization) or a weakened and corroded structure (dezincification). Mechanical methods of chipping and scraping will expose such a corroded or weakened component structure, and a visual inspection will be effective in identifying this type of degradation." Additionally, Step 4.4 identified how hardness tests are applied to detect selective leaching and stated "For comparison purposes, PERFORM a hardness test on an unexposed surface (Unaffected area). NOTE: Unaffected area is typically the outside of a pipe or valve whose inside surface was exposed to the raw water, treated water, closed cycle cooling water, or ground water. This hardness test yields a hardness value that, when compared with the value obtained on the exposed surface, proves that the exposed area is at least 80 percent as hard as the unexposed area."

The licensee selected the fire protection system cast iron valve 2FP136 and retard chamber drain plug (copper alloy) for examination in support of the Selective Leaching AMP because these components were constructed of materials potentially susceptible to selective leaching. Under work order (WO) 01941521-01, the licensee removed cast iron plates from the side of valve 2FP136 to access the internal surfaces and the retard drain plug was also removed to support a visual inspection. On November 25, 2020, the licensee completed a visual inspection of the internal surfaces of 2FP136 and retard chamber drain plug for evidence of selective leaching in accordance with procedure ER-LA-700-401-1001 and documented the results in WO 01941521-01. The inspectors noted the licensee marked procedure ER-LA-700-401-1001 Sections 4.3 and 4.4 as "not applicable" and these sections include the steps to implement the hardness and mechanical tests as described above. Because the licensee removed the side plates and drain plug for this inspection, it would have been possible for the licensee to perform a hardness test on both the internal and external surfaces of these removed components. Without a hardness tests or other mechanical tests as described in Section 4 of ER-LA-700-401-1001, the inspection of 2FP136 and retard chamber drain plug were not adequate to fulfill the Selective Leaching AMP one-time sample as described in UFSAR. Additionally, procedure ER-LA-700-401-1001 Step 4.3.1.F required that pictures of the inspected surfaces be taken if possible and retained. However, the licensee had not taken and retained pictures within this WO for the removed retard chamber drain plug susceptible to selective leaching.

Corrective Actions: The licensee entered this issue into the corrective action program (CAP).

Corrective Action References: AR 4406544

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to complete a hardness test or mechanical test of the internal surface of material within valve 2FP136 and retard chamber drain plug susceptible to selective leaching was contrary to procedure ER-LA-700-401-1001 and a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to complete a hardness or mechanical test of 2FP136 internal surface and retard chamber drain plug could result in continued service with a component susceptible to selective leaching which may not ensure the function of the fire protection system valve 2FP136 consistent with the current licensing basis through the period of extended operation.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered "Yes" to Question A.1 of Exhibit 2 for the Mitigating Systems screening questions, which asked "If the finding is a deficiency affecting the design or qualification of a mitigating System Structure or Component (SSC), does the SSC maintain its operability or PRA functionality?" Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, by marking the procedure ER-LA-700-401-1001 Sections 4.3 and 4.4 as "not applicable," the licensee failed to adequately control and execute a procedure for examination of material within valve 2FP136 and retard chamber drain plug susceptible to selective leaching that was necessary to demonstrate that nuclear safety was an overriding priority.

Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

2B High Pressure Core Spray Diesel Generator Lube Oil Cooler Restricted Tubes Not Removed from Service			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000374/2021010-03 Open/Closed	[H.14] - Conservative Bias	71003

The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to follow procedure ER-AA-335-1006 "Heat Exchanger Electromagnetic Testing Methodology" in support of the Open-Cycle Cooling Water System aging management program. Specifically, the licensee did not adhere to the procedure and install tube plugs in three restricted tubes within the 2B high pressure core spray (HPCS) diesel generator (DG) heat exchanger (HX) or generate an issue report (IR) and these actions were necessary to assure that the intended function of the 2B HPCS DG HX would be maintained consistent with the current licensing basis through the period of extended operation.

Description:

On June 26, 2020, the licensee performed eddy current testing (ET) of the 2B HPCS DG lube oil cooler HX tubes in accordance with procedure ER-AA-335-1006 "Heat Exchanger Electromagnetic Testing Methodology" to support the LaSalle Station Open-Cycle Cooling Water System AMP and identified degraded tubes as documented in WO 04671902. As a result of ET, 217 out of 440 tubes within this HX were identified with inside diameter "pit type" flaws that ranged up to 60 percent through-wall which met the acceptance criteria contained in Section 4 of ER-AA-335-1006 and therefore, were not required to be removed from service (e.g. plugged) prior to the next ET of this HX. However, the licensee also identified three tubes with obstructions that precluded insertion of an ET probe and these tubes were identified as restricted tubes. The inspectors reviewed the previous ET of this HX completed on May 2, 2016, as documented in WO 01568624, and noted that the same three tubes had been identified by the licensee as restricted tubes. Procedure ER-AA-335-1006 Step 4.4.2.3 stated "AVOID leaving obstructed/restricted tubes in service, especially in raw water cooled

HXs. The restriction may reduce water flow velocity enough to cause siltation and increased pitting corrosion. Since the affected cannot be ET full-length, tube leakage cannot be predicted. If tubes in a raw water cooled HX have been restricted in two consecutive exams and cannot be cleared, they shall be plugged, or an Issue Report (IR) shall be generated for trending." However, after completion of the 2020 inspection, the licensee had not installed tube plugs in the three restricted tubes to remove them from service, nor had the licensee written an IR to capture this adverse condition in the CAP for trending.

Corrective Actions: The licensee determined that the function of the 2B HPCS DG HX was not affected by the condition of the restricted tubes based on the results of recent satisfactory surveillance testing and entered this issue into the CAP.

Corrective Action References: AR 04406519

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to follow procedure ER-AA-335-1006 and install tube plugs in three restricted tube within the 2B HPCS DG HX or generate an IR for trending is contrary to 10 CFR 50 Appendix B Criterion V and a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to follow procedural guidance and install tube plugs in three restricted tube within the 2B HPCS DG HX or generate an IR did not assure that the intended function of the 2B HPCS DG HX would be maintained consistent with the current licensing basis through the period of extended operation.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspector assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered "Yes" to Question A.1 of Exhibit 2 for the Mitigating Systems screening questions, which asked "If the finding is a deficiency affecting the design or qualification of a mitigating System Structure or Component (SSC), does the SSC maintain its operability or PRA functionality?" Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, the licensee elected to leave three restricted DG HX tubes inservice, as allowed by the ET procedure, but this decision was not the preferred/prudent choice identified within the procedure (e.g. preferred option was to install tube plugs).

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states in part that, activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Procedure ER-AA-335-1006, Step 4.4.2.3 stated “AVOID leaving obstructed/restricted tubes in service, especially in raw water cooled HXs. The restriction may reduce water flow velocity enough to cause siltation and increased pitting corrosion. Since the affected cannot be ET full-length, tube leakage cannot be predicted. If tubes in a raw water cooled HX have been restricted in two consecutive exams and cannot be cleared, they shall be plugged, or an IR shall be generated for trending.”

Contrary to the above, on June 26, 2020, while performing an activity affecting quality (ET examination of the 2B HPCS DG lube oil cooler HX tubes) the licensee failed to accomplish this activity in accordance with procedure ER-AA-335-1006 Step 4.4.2.3. Specifically, the licensee did not install tube plugs in three HX tubes which had been restricted for two consecutive examinations and did not generate an IR for trending.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Inadequate Examination of 2DG01A Diesel Generator Heat Exchanger Tubes to Support the Selective Leaching Aging Management Program

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000374/2021010-02 Open/Closed	[H.5] - Work Management	71003

The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to apply a procedure appropriate to the circumstances for examination of the 2DG01A diesel generator (DG) jacket water heat exchanger (HX) tubes for the intended application (detection of selective leaching). Specifically, the licensee did not include instructions for a visual examination coupled with hardness tests or other mechanical tests of the degraded HX tube material necessary to determine if selective leaching had occurred and necessary to ensure the intended function of 2DG01A HX would be maintained consistent with the current licensing basis through the period of extended operation.

Description:

As described in the UFSAR Appendix P Section A.2.1.22, the Selective Leaching AMP is a new condition monitoring program that includes one-time visual inspections of a representative sample of susceptible components within the scope of license renewal. These one-time inspections include visual examinations, coupled with either hardness measurement or other mechanical examination techniques such as destructive testing, scraping, or chipping, of selected components that may be susceptible to selective leaching. This inspection is conducted to determine whether loss of material due to selective leaching is occurring, and whether the process will affect the ability of the components to perform their intended function for the period of extended operation. Metallurgical evaluation may also be performed. If loss of material is identified, further evaluation of the extent of condition will be performed under the CAP, which may include an expansion of the sample size and locations.

The 2DG01A DG jacket water HX tubes are fabricated from a copper alloy potentially susceptible to loss of material caused by selective leaching. On December 15, 2020, the licensee cancelled WO 01940791 “Inspect for Selective Leaching- 2DG01A” to no work accomplished and documented that this WO was cancelled because the work planned was

credited as completed under WO 04587549-01. Specifically, the licensee documented that ET of the 2DG01A DG HX was performed per WO 04587549-01 and that eddy current testing (ET) was the method of testing HX tubing for selective leaching per ER-LA-700-401-1001. On November 19, 2019, as documented in WO 04587549-01, the licensee completed ET of the 2DG01A HX tube bundle to meet the Closed Treated Water AMP and a visual examination of the water box end of this HX for the Service Level III and Service Level III Augmented Coating Programs. Because the licensee also credited activities completed under WO 04587549-01 to fulfill the LaSalle Selective Leaching AMP, the inspectors reviewed this WO to determine if the activities as completed here were consistent with procedure ER-LA-700-401-1001 "Guidance for Performing Selective Leaching Inspections." In ER-LA-700-401-1001, the licensee identified ET, visual examinations and hardness or mechanical tests required to identify evidence of selective leaching for susceptible materials. The ET completed within 04587549-0, identified 13 degraded tubes that had pit type defects ranging up to 49 percent through-wall within the 2DG01A HX tube bundle and the loss of material (pits) in these tubes could have been caused by selective leaching. However, the licensee's scope of visual examination completed under WO 04587549-01 was focused exclusively on evaluating the condition of the coatings at the water box ends of the HX and did not include examination of the susceptible tube material to look for evidence of selective leaching (e.g. loss of material or change in color) nor did the licensee conduct hardness or mechanical tests of the HX tubing. Therefore, the procedural guidance applied by the licensee within WO 04587549-01 was not appropriate to the circumstances to credit for the Selective Leaching AMP because it did not include instructions for visual examinations coupled with hardness tests or other mechanical tests of the degraded HX tube material necessary to determine if selective leaching had occurred. Additionally, the inspectors identified that the degraded tubes susceptible to selective leaching had not been entered into the CAP to evaluate this condition, and extent of condition, which prompted the licensee to enter the 2DG01A HX degraded tube conditions into the CAP (AR 04404903).

Corrective Actions: The licensee entered this issue into the CAP.

Corrective Action References: AR 04404903 and AR 4406544

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to apply a procedure appropriate to the circumstances for examination of the 2G01A DG jacket water HX tubes for the intended application (e.g. detection of selective leaching) was contrary to 10 CFR Appendix B, Criterion V and a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to ensure a procedure appropriate to the circumstances for inspection of the 2DG01A HX tubes to identify selective leaching did not assure that the intended function of the 2DG01A HX would be maintained consistent with the current licensing basis through the period of extended operation.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered "Yes" to Question A.1 of Exhibit 2 for the Mitigating Systems screening questions, which asked "If the finding is a deficiency affecting the design or qualification of a mitigating System

Structure or Component (SSC), does the SSC maintain its operability or PRA functionality?" Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the licensee failed to control work activities to ensure that visual examinations, hardness tests or other mechanical tests of the 2G01A DG jacket water HX tube material would be accomplished and these tests were necessary to demonstrate that nuclear safety was an overriding priority.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states in part that, activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, on November 19, 2019, the licensee performed an activity affecting quality (examination of the 2DG01A HX tubes) without a procedure appropriate to the circumstances for the intended application. Specifically, the copper alloy HX tube material (susceptible to selective leaching) was not subjected to appropriate visual examinations coupled with hardness or mechanical tests necessary to detect the presence of selective leaching in support of the credited application (e.g. the Selective Leaching AMP).

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Observation: Proposed Change to the Boiling Water Reactor Vessel Internals Aging Management Program Enhancement	71003

The BWR Vessel Internals AMP is an existing condition monitoring and mitigative program that manages the effects of cracking, loss of material, and loss of fracture toughness of reactor pressure vessel internal components through condition monitoring activities that include nondestructive examinations as identified in the Boiling Water Reactor Vessel Internals Program (BWRVIP) guidelines and the American Society of Mechanical Engineers (ASME) Code Section XI. As described in the UFSAR Appendix P, Section A.2.1.9 "BWR Vessel Internals" this program included Enhancement 4, with actions to "Install core plate wedges no later than six months prior to the period of extended operation (PEO), or before the end of the last refueling outage prior to the period of extended operation, whichever occurs later; or, submit an inspection plan for the core plate rim hold-down bolts with a supporting analysis for NRC approval at least 2 years prior to entering the PEO."

The licensee intended to make changes to Enhancement 4 of this program and in AR 04334088, documented that "recently the Electric Power Research Institute (EPRI) BWR Vessel Internals Project (BWRVIP) received NRC approval of industry document BWRVIP-25 Revision 1, Core Plate Inspection and Flaw Evaluation Guidelines. This document addresses core plate bolt inspections. The previous revision required core plate bolt inspections, but it was not possible to implement meaningful inspections. The new revision provides a

justification to eliminate core plate bolt inspections if certain criteria are met." The licensee's planned actions to support changes to this program were also identified in AR 04334088, and included: additional internal reviews to confirm that BWRVIP-25, Revision 1 Appendix I criteria were satisfied, a revision to the UFSAR Appendix P to incorporate the approved BWRVIP-25, sunsetting of the BWRVIP LaSalle deviation for core plate bolt inspections, and updates for the BWR Internals Program documents.

At the conclusion of this NRC inspection, the licensee's internal reviews of the analysis supporting this change to Enhancement 4 of the BWRVIP Program were still in progress. The completion of these actions will be verified during the Phase 2 inspection, prior to the PEO.

Observation: Limited Guidance for Visual Inspections Supporting the Aboveground Metallic Tanks Aging Management Program	71003

The Aboveground Metallic Tanks AMP is an existing condition monitoring program which was enhanced to provide for management of loss of material and loss of sealing for metallic tanks within the scope of the program. The Unit 1 and Unit 2 CY storage tanks are the only tanks within the scope of this program. This program has new enhancements to be implemented prior to the PEO that include visual inspection of the interior and exterior surfaces, visual inspection of the perimeter caulking, volumetric examinations of the tank bottom, and all are intended to detect of loss of material caused by aging mechanisms (e.g. corrosion or cracking). Based on review of activities credited toward this program the inspectors identified vulnerabilities associated with lack of detailed guidance for performing visual inspections of the CY tanks.

On May 26, 2020, the licensee completed a visual inspection of the exterior surfaces of the Unit 1 and Unit 2 CY tanks in accordance with procedure ER-AA-700-404 and no adverse conditions were identified. The guidance contained in procedure ER-AA-700-404 and the associated WOs for this visual inspection was minimal and did not include requirements such as the training required for staff performing this inspection nor detailed guidance to ensure the visual examination was effectively implemented. For example, no guidance was provided for surface condition (wet/dry), minimum lighting, viewing angle, maximum distance to exam surface, nor detailed thresholds for recording defects in the tank exterior (e.g. maximum pit size, areas of discoloration, or minimum size of a crack to be recorded). Therefore, the inspectors interviewed the licensee staff member who performed this visual inspection to obtain additional information on how this activity was conducted. Specifically, the licensee's inspector:

- Accessed the exterior perimeter wall surfaces of the tank from ground level and accessed the roof via an external permanent ladder and platform located on top of the roof which extended partway around the perimeter of the roof. The extent of visual examination included all accessible exterior surfaces and the perimeter caulk seal which was consistent with the UFSAR scope for this enhancement.
- Reported that no additional temporary scaffolding was installed to enable close access to more distant surfaces (e.g. top of 24-foot high walls and across top surface of tank roof) nor were other visual aids such as binoculars implemented for this examination.
- Reported that it was a dry day and the visual examination was conducted during daylight hours but did not recall if it was sunny or overcast.
- Applied supplemental lighting (portable flashlight) for areas of the external tank surface accessed within covered sheds, but no measurement of lighting conditions

was performed (e.g. illumination was not measured with a light meter nor was a character card employed to confirm visual resolution under existing interior lighting conditions.)
- Did not take pictures of the tank surfaces during this inspection.

On June 5, 2020, the licensee completed a visual inspection of the Unit 1 CY tank interior surfaces, in accordance with procedure ER-AA-700-404 "Aging Management Program for Aboveground Metallic Tanks" and WO 01926962 and no adverse conditions were identified. The guidance in contained in procedure ER-AA-700-404 and WO 01926962 for this visual inspection was minimal and typically limited to general statements such as; consider the need for cleaning, lighting, access and collect appropriate data based upon the aging effects/conditions expected. The NRC inspectors were concerned that with the minimal procedural guidance important parameters may not have been adequately controlled to ensure the visual examination was effective for identification of age-related degradation. For example, no guidance was provided for the training or qualification requirements for staff performing this visual examination, no guidance for expected tank surface condition (e.g. wet/dry), no minimum lighting, no maximum viewing angle, no maximum distance to from the eye to the surface examined, nor what specific conditions should be recorded and evaluated within the CAP (e.g. maximum pit size, areas of discoloration, or cracking). Therefore, the inspectors interviewed the licensee staff member who performed this visual examination and obtained additional information on how this examination was conducted. Specifically, the licensee's inspector:

- Accessed the interior of this tank through a manway located near the bottom of the tank and the examination was conducted from the tank floor surface by direct inspection.
- Reported that the tank interior surfaces were dry, and the extent of this examination included all internal surfaces.
- Reported that the tank interior was illuminated with temporary area lighting installed within the tank and directed at the floor and was supplemented with a portable flashlight to illuminate the interior surfaces.
- Reported no measurement of lighting conditions was performed (e.g. illumination was not measured with a light meter nor was a character card employed to confirm visual resolution under existing interior lighting conditions).
- Reported that no scaffolding was installed within the tank to provide access to more distant surfaces (e.g. top of 24-foot high walls and interior surface of the roof of this tank) nor were other visual aids employed such as binoculars.
- Did not take pictures of the tank surfaces nor record areas of discoloration present at welds in the tank floor plates, which the NRC inspectors noted during review of the tank floor pictures recorded by the licensee's vendor staff following repairs of the tank floor plates.

Given, the conditions described for these visual inspections, the NRC inspectors could not confirm that these inspections (as performed) would have detected smaller flaws (e.g. pitting/cracking), particularly at the tank surfaces more distant from the licensee's inspectors. However, smaller flaws (if they existed) would not pose a challenge to the CY tanks structural or leakage integrity. Additionally, the lack of detailed procedure guidance, was offset in part, by the training and experience of the licensee's inspectors who had training and experience in application of the ASME Code Section XI; VT-1, VT- 2, or VT-3 type visual examinations. Further, the licensee's inspectors were also experienced engineers and focused the visual inspection on more highly stressed surface areas of the tank which would be more

susceptible to developing cracks (e.g. tank penetrations and plates adjacent to welds). Therefore, the NRC inspectors concluded the visual inspections, as performed, would likely have identified flaws that represented a substantive degraded condition (e.g. those which could impact the CY tanks storage function).

The licensee entered the NRC inspectors' observations related to vulnerabilities related to lack of detailed guidance for these visual examination procedures into the CAP program (AR 04406502, "NRC ID Aboveground Metallic Tanks Procedure Vulnerability").

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

- On March 5, 2021, the inspectors presented the Post-Approval Site Inspection for License Renewal (Phase I) results to Ms. A. McMartin, Engineering Director, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71003	Calculations	L-003119	Evaluation of the LaSalle Unit 2 Core Shroud Welds	0
	Corrective Action Documents	AR 02452708	Core Shroud Inspection Scope Expansion Required	02/14/2015
		AR 02453200	Outage Delay Due to H4 Shroud Weld	02/14/2015
		AR 04298227	License Renewal (LR) Coating Inspection for 2DG01A HX	11/18/2019
		AR 04327665	License Renewal (LR) Coating Inspection for 2WR01AB HX	03/18/2020
		AR 04330056	Changes Needed to License Renewal Reference in AMP and Procedures	03/27/2020
		AR 04334088	LaSalle UFSAR Update for BWRVIP-25 Revision 1	04/09/2020
		AR 04345750	1CY01T External Visual Inspection Summary	05/26/2020
		AR 04345753	LR 2CY01T Visual External Surface Inspection Summary	05/26/2020
		AR 04347887	LR 1CY01T Internal Inspection Summary	06/03/2020
		AR 04348141	License Renewal (LR) Selective Leaching WO Needed for 2FP029	06/04/2020
		AR 04351373	License Renewal (LR) Coating Inspection for 2WR01AA HX	06/19/2020
		AR 04352259	As Found Coatings Inspection for 2B DG HX	06/24/2020
		AR 04352266	DG HX Reversing Head Coating Issue	06/24/2020
		AR 04355449	U1 CY Tank Perimeter Seal Caulking is Cracked and Separated	07/08/2020
		AR 04366009	License Renewal (LR) Selective Leaching WO for 2WS002A	08/28/2020
		AR 04371473	2CY01T Unit 2 CY Tank Base Caulking Cracked/Separated	09/23/2020
		AR 04381887	LaSalle Unit 1 Core Plate Bolt Inspections	11/03/2020
		AR 04383915	Unable to perform WO 01942056-01 Due to Poor Isolation	11/12/2020
		AR 04391021	License Renewal (LR) Selective Leaching WO Needed for 0FP040	12/18/2020
		AR 04391024	License Renewal (LR) Selective Leaching WO Needed for 1FP033	12/18/2020
		AR 04406034	Caulk Inspection Results for 2CY01T	03/02/2021
		AR 04406041	Caulk inspection results for 1CY01T	03/02/2021
		AR 04406046	Seal Inspection on 0MC01T per PMID 186119	03/02/2021
		AR 04406162	License Renewal (LR) Coating Inspection for 0DG01F Strainer	03/03/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents Resulting from Inspection	AR 04404903	2DG01A Heat Exchanger Tubes Material Degradation	02/26/2021
		AR 04406502	NRC ID Aboveground Metallic Tanks Procedure Vulnerability	03/04/2021
		AR 04406519	NRC ID Failure to Write IR in Heat Exchanger Program	03/04/2021
		AR 04406544	NRC ID LR Selective Leaching Program Performance Deficiencies	03/04/2021
	Miscellaneous	Report - LAS-52922	Failure Evaluation of Pitting on the Aluminum Plate from the CY Tank Floor, Component ID: 2CY01T, AR.: 1231679, LaSalle County Unit 2	07/08/2011
		Report - NUC2020114-L-CSPAR-001	HT Exchanger 2WR01AA	06/18/2020
		Report - NUC2020116-L-CSPAR-001	HT Exchanger 2WR01AB	03/21/2020
		Report - NUC2021116-L-CAR-001	0DG01F Cooling Water Strainer Coating Assessment Report	02/28/2021
	NDE Reports	Ultrasonic Examination Report 7480-320477-HA2-SHRD	Weld H4	02/24/2015
	Procedures	ER-AA-330-014	Exelon Safety-Related (Service Level III) Coatings	5
		ER-AA-335-1006	Heat Exchanger Electromagnetic Testing Methodology	5
		ER-AA-700-401	Selective Leaching Aging Management	2
		ER-AA-700-404	Aging Management Program for Aboveground Metallic Tanks	2
		ER-AB-331	BWR Internals Program Management	17
		ER-AB-331-1001	Boiling Water Reactor (BWR) Internals Program	10
		ER-AB-331-101	Evaluation for Thermal Aging/Neutron Embrittlement of BWR Reactor Internal Components	3
		ER-LA-700-401-1001	Guidance for Perming Selective Leaching Inspections	0
		LTS-600-8	Reactor Vessel Internals Inservice Inspection During Reactor Refueling	31

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	01568624 01	Disassemble, Clean & Inspect HPCS DG Heat Exchanger	05/03/2016
		01598701 01	1CY01T Perform NDE of Tank Floor	06/16/2020
		01598754 01	2CY01T Perform NDE of Tank Floor	09/15/2020
		01926962 02	A One-Time Visual Inspection of 1CY01T	06/10/2020
		01940791 01	Inspection for Selective Leaching - 2DG01A	12/14/2020
		01941521 01	Inspection for Selective Leaching - 2FP136	11/25/2020
		04587549 01	2DG01A Inspect, Clean and Eddy Test D/G HX	11/19/2019
		04655313 01	RX BLDG Closed Cooling Water HX Inspection	03/23/2020
		04660289 01	RX BLDG Closed Cooling Water HX Inspection	06/19/2020
		04671902 01	LRA Disassemble, Clean & Inspect HPCS DG HX	06/26/2020
		04799458 01	1CY01T External Surfaces Inspection	05/26/2020
		04927905 01	2CY01T External Surfaces Inspection	05/26/2020