



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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August 13, 2019

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2—INTEGRATED INSPECTION
REPORT 05000373/2019002 AND 05000374/2019002

Dear Mr. Hanson:

On June 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at LaSalle County Station, Units 1 and 2. On July 10, 2019, the NRC inspectors discussed the results of this inspection with Mr. P. Hansett and other members of your staff. The results of this inspection are documented in the enclosed report.

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

If you contest the violation or significance or severity of the violation 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.

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.

B. Hanson

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Sincerely,

/RA/

Kenneth R. Riemer, Chief
Branch 1
Division of Reactor Projects

Docket Nos. 05000373 and 05000374
License Nos. NPF-11 and NPF-18

Enclosure:
As stated

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Letter to Bryan C. Hanson from Kenneth R. Riemer dated August 13, 2019

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2—INTEGRATED INSPECTION REPORT 05000373/2019002 AND 05000374/2019002

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000373 and 05000374

License Numbers: NPF-11 and NPF-18

Report Numbers: 05000373/2019002 and 05000374/2019002

Enterprise Identifier: I-2019-002-0070

Licensee: Exelon Generation Company, LLC

Facility: LaSalle County Station, Units 1 and 2

Location: Marseilles, IL

Inspection Dates: April 01, 2019 to June 30, 2019

Inspectors: J. Cassidy, Senior Health Physicist
J. Havertape, Resident Inspector
A. Nguyen, Senior Resident Inspector
C. Phillips, Project Engineer
W. Schaup, Senior Resident Inspector
C. St. Peters, Reactor Engineer
R. Zuffa, Illinois Emergency Management Agency

Approved By: Kenneth R. Riemer, Chief
Branch 1
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at LaSalle County Station, Units 1 and 2 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

Failure to Perform Post Maintenance Test to Demonstrate 2C Traversing In-Core Probe System was able to Perform its Intended Function			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000374/2019002-01 Open/Closed	[H.5] - Work Management	71152
<p>The inspectors identified a finding of very low safety significance for the licensee’s failure to perform a post maintenance test in accordance with station procedure MA-AA-716-012, “Post Maintenance Testing,” Revision 23. Specifically, after performing repairs to 2C51-J003C, penetration flange, the licensee failed to perform a post maintenance test of the 2C traversing in-core probe system that verified the system was able to perform its intended function and that no new or related problems were created during the repairs. When the 2C traversing in-core probe (TIP) system was operated for the first time to calibrate the local power range monitors, the probe would not insert past the flange penetration due to damage to tubing caused during the repair.</p>			

Failure to Incorporate General Electric Hitachi Nuclear Energy Safety Communication 11-05 Criteria into Surveillance Procedures for Control Rod Operability			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000373,05000374/2019002-02 Open/Closed	None (NPP)	71153
<p>The inspectors documented a self-revealed Green finding and associated Non-cited Violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” for the licensee's failure to incorporate Safety Communication (SC) 11-05 friction limits into surveillance procedures to ensure that control rods could perform their safety function. Specifically, licensee-established test procedures did not prohibit the full-stroke insertion friction test methodology for control rods with insert stall flow greater than 5 gallons per minute. Under this condition, the licensee’s test procedure did not incorporate all of the applicable test requirements needed to ensure the as-found data could be compared to the site-specific operability limit for control rod friction determined in General Electrical Hitachi Nuclear Energy (GEH) 0000-0143-8665, SC 11-05 Friction Limits for LaSalle Units 1 and 2, dated February 9, 2012.</p>			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On June 8, 2019, the unit was down powered to 77 percent for rod recovery, rod sequence exchange and turbine valve testing. The unit was returned to thermal rated power the same day and remained at or near rated thermal power for the remainder of the inspection period.

Unit 2 began the inspection period at rated thermal power. On June 1, 2019, the unit was down powered to 72 percent for rod pattern adjustment and turbine valve testing. The unit was returned to thermal rated power the same day and remained at or near rated thermal power for the remainder of the inspection period.

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 performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of extreme high temperatures for the following systems:
 - offsite power
 - reactor building ventilation
 - diesel generators

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 1 reactor core isolation cooling system on June 18, 2019
- (2) Unit 1 high pressure core spray on June 26, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Fire Zone 7B3, Unit 1 diesel generator building, elevation 710', division 1 standby diesel generator room, on May 14, 2019
- (2) Fire Zone 7B2, Unit 1 diesel generator building, elevation 710', division 2 standby diesel generator room, on May 14, 2019
- (3) Fire Zone 7B1, Unit 1 diesel generator building, elevation 710', division 3 standby diesel generator room, on May 14, 2019
- (4) Fire Zone 7C6, Unit 1 diesel generator building, elevation 674', division 1 residual heat removal service water pump room, on June 25, 2019
- (5) Fire Zone 7C6, Unit 1 diesel generator building, elevation 674', division 2 residual heat removal service water pump room, on June 25, 2019

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Regualification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator regualification examination OBE 19-2/ESG 61, Revision 4, on April 30, 2019.

71111.12 - Maintenance Effectiveness

Quality Control (IP Section 02.02) (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance activities:

- (1) commercial grade dedication of Westinghouse 480 V motor control centers with Eaton size 1 and 2 contactors

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Units 1 and 2 Yellow online risk for planned maintenance on the service water system on May 6, 2019
- (2) Unit 2 Yellow online risk during 2VY02A, high pressure core spray pump room cooler chemical cleaning on May 28, 2019
- (3) Unit 1 Yellow online risk during 1VY02A, high pressure core spray pump room cooler replacement on June 19, 2019
- (4) risk screening and mitigation plan for heavy lift at service water screen house over safety-related service water piping to support Work Order 04690769

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Unit 2 turbine bypass valve failed to fast open during surveillance, LOS-TG-M4
- (2) Unit 1 control room emergency make-up supply air heating, ventilation, and air conditioning system operability following failure of 'A' train emergency make up unit flow transmitter
- (3) Unit 1 high pressure core spray operability following invalid level 2 signal during 'A' narrow range reactor water level pressure transmitter replacement
- (4) Units 1 and 2 containment operability while de-tensioning containment tendons for in service inspections
- (5) Unit 2 2VY02A, high pressure core spray pump room cooler after identification that test equipment not properly calibrated

71111.19 - Post-Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) post-maintenance testing of control room emergency make-up air supply heating, ventilation, and air conditioning system following 'A' auxiliary electrical equipment room compressor replacement and damper repairs
- (2) Unit 2 reactor core isolation cooling control system calibration, LIS-RI-215, after replacement of the reactor core isolation cooling flow transmitter, 2E51-N003, under Work Order 4587076
- (3) Unit 1 fuel pool cooling pump 1A testing on April 9, 2019
- (4) Unit 1 A residual heat removal pump room cooler testing on April 9, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Inservice Testing (IP Section 03.01) (2 Samples)

- (1) Unit 1 reactor core isolation cooling system biennial comprehensive in-service testing pump test on June 25, 2019
- (2) Unit 2 'C' residual heat removal biennial comprehensive in-service pump test on June 18, 2019

Surveillance Tests (other) (IP Section 03.01) (1 Sample)

- (1) Unit 2 jet pump flow daily Technical Specification surveillance, LOS-AA-S201

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (3 Samples)

- (1) ERO drill conducted on June 19, 2019
- (2) ERO drill conducted on May 29, 2019
- (3) ERO drill conducted on June 5, 2019

RADIATION SAFETY

71124.04 - Occupational Dose Assessment

External Dosimetry (IP Section 02.02) (1 Sample)

- (1) The inspectors evaluated the external dosimetry program implementation.

Internal Dosimetry (IP Section 02.03) (1 Sample)

The inspectors evaluated the internal dosimetry program implementation.

- (1) Whole Body Counts
 - Whole Body Counts Associated with IR 04223218
- In-vitro internal monitoring
 - None were available during this inspection
- Dose assessments performed using air sampling and DAC-hr monitoring
 - None were available during this inspection

71124.05 - Radiation Monitoring Instrumentation

Calibration and Testing Program (IP Section 02.02) (1 Sample)

The inspectors evaluated the calibration and testing program implementation.

- (1) The inspectors evaluated the calibration and testing program implementation.
 - Alarm setpoint and calibration method check of personnel contamination monitors, portal monitors and small article monitors
 - ARGOS-5; Monitor Number 1012-293
 - PM-12; Serial Number 1204PM1255
 - Sam-12; Serial Number 12160
 - Failure to meet calibration or source check acceptance criteria
 - MGP, RAM GAM, Serial Number 079305
 - MGP, RAM GAM, Serial Number 079484
 - Ludlum 3, Serial Number 079757

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

- (1) Portable survey instruments
- Eberline RO20, Serial Number 0021635
 - Eberline RO20, Serial Number 0020291
 - Eberline RO20, Serial Number 0016567
 - Ludlum 3, Serial Number 0021768
 - Ludlum 3, Serial Number 0011995
 - MGP Telepole, Serial Number 16670
 - MGP RAM GAM, Serial Number 0016289

Source check demonstration

- Eberline RO20
- Ludlum 3
- MGP Telepole
- MGP RAM GAM

Area radiation monitors and continuous air monitors

- Area Monitor, Refuel Floor Low Range
- Area Monitor, Refuel Floor High Range
- Continuous Air Monitor, Refuel Floor
- Area Monitor, Unit 2 Reactor Building 820'
- Continuous Air Monitor, Unit 2 Drywell (2PL11J)
- Area Monitor, 710' Chemistry Corridor

Personnel contamination monitors, portal monitors and small article monitors

- ARGOS-5; Monitor Number 1012-293
- PM-12; Serial Number 1204PM1255
- Sam-12; Serial Number 12160

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

- (1) Unit 1 (7/1/2018 - 3/31/ 2019)
(2) Unit 2 (7/1/2018 - 3/31/2019)

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 1 (4/1/2018 - 3/31/2019)
(2) Unit 2 (4/1/2018 - 3/31/2019)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

(1) 10/1/2018 - 3/1/2019

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed the licensee’s corrective action program for potential adverse trends in documenting conditions adverse to quality that might be indicative of a more significant safety issue.

71153 - Followup of Events and Notices of Enforcement Discretion

Event Followup (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated a manual reactor plant scram where one control rod failed to insert into the core and licensee’s response on August 31, 2018.

INSPECTION RESULTS

Observation: Semi-Annual Trend Review of Corrective Action Program	71152
<p>The inspectors have been focusing on the licensee threshold for entering conditions adverse to quality into the corrective action program (CAP). The inspectors identified one instance of a condition adverse to quality that was inappropriately placed in the licensee’s non-corrective action program. The inspectors brought it to the licensee’s attention and the item was placed into the CAP and documented in AR 04261369. Also, during the review, the inspectors noted that the licensee had documented in AR 04247489 a trend in human performance fundamental behaviors in the instrument maintenance department. During subsequent work activities the inspectors and the licensee identified additional human performance issues associated with the instrument maintenance department that the licensee placed into their CAP. None of the issues identified by the inspectors or licensee were more than minor violations but indicate that actions put in place by the licensee have not been effective. The inspectors will continue to review for additional issues and evaluate the licensee’s corrective actions for effectiveness.</p>	

Failure to Perform Post Maintenance Test to Demonstrate 2C Traversing In-Core Probe System was able to Perform its Intended Function			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000374/2019002-01 Open/Closed	[H.5] - Work Management	71152
<p>The inspectors identified a finding of very low safety significance for the licensee’s failure to perform a post maintenance test in accordance with station procedure MA-AA-716-012, “Post Maintenance Testing,” Revision 23. Specifically, after performing repairs to 2C51-J003C, penetration flange, the licensee failed to perform a post maintenance test of the 2C traversing in-core probe system that verified the system was able to perform its intended function and that no new or related problems were created during the repairs. When the 2C traversing in-core probe (TIP) system was operated for the first time to calibrate the local power range</p>			

monitors, the probe would not insert past the flange penetration due to damage to tubing caused during the repair.

Description:

On February 25, 2019, Action Request (AR) 4223654 documented that during a review of local leak rate test (LLRT) failures during the current L2R17 refueling outage to verify that corrective actions were in place for each failure, it was noted that the work order for 2C TIP system isolation valve, 2C51-J004C, was deferred to the next refueling outage L2R18 in 2021. The 10 CFR 50, Appendix J, program manager documented that 2C51-J004C is a single valve leakage pathway per the stations LLRT program, and as such, minimum leakage through this valve would equal the maximum pathway leakage. If the valve failed a subsequent LLRT in the next outage with a leakage greater than allowed by Technical Specifications, it would be a reportable event. The action request documented that the valve had to be repaired or replaced per Work Order (WO) 1909824 prior to start up from L2R17 refueling outage.

Before work started per WO 1909824, personnel that had performed the failed LLRT assumed the cause of the failure was at the 2C TIP system containment penetration flange, 2C51-J003C, and not the valve. This was discussed between station outage control center, LLRT, and mechanical maintenance personnel. During these discussions, industry experience believed to be from Dresden station was a basis for believing that it might be the penetration leaking and not the valve. The decision was made to repair the fittings at the TIP penetration flange instead of replacing the valve.

After repairs to the penetration were completed, an LLRT was performed on the 'C' TIP system that resulted in another failure. The valve was replaced, and the post maintenance LLRT was performed with satisfactory results. The inspectors identified that no post maintenance testing was specified in the WOs that repaired the penetration flange and that replaced the isolation valve that would verify the TIP system would be able to perform its intended function or that no new or related problems were created during the repairs.

After reactor start up and before achieving full power, the TIP system is used to calibrate the local power range monitors (LPRM) throughout the core that provide input to the average power range monitors (APRM) used for monitoring power and reactor protection features. At approximately 65 percent thermal rated power the licensee began the LPRM calibrations using the TIP systems. The calibration requires four of the five TIP systems to completely map the core. Neither the 2C nor the 2E TIP system detectors could be inserted into the core. The 2E TIP system had no work performed on it during the outage. The decision was made to down power the unit to determine the why the detectors would not insert and effect repairs on the 2C and 2E TIP systems.

During repairs to the 2C TIP system penetration flange, it was discovered that the tubing appeared to have been damaged during the previous flange repair attempt. The tubing was over tightened, crushing the tubing resulting in constricting the tubing, leading to the detector not being able to be inserted. During repairs to the 2E TIP system the licensee determined that at some point during the refueling activities someone had damaging the tubing inside of the drywell preventing the detector from inserting into the core.

The inspectors reviewed the applicable maintenance documentation and WOs and determined that after maintenance was performed on the 2C TIP system, the licensee failed to perform a post maintenance test to verify the system was able to perform its intended function and that no new or related problems were created by the repairs as required by

station procedure MA-AA-716-012, "Post Maintenance Testing." Additionally, during review of the licensee's root cause investigation report, the inspectors noted that the decision to repair the penetration flange was made without properly troubleshooting the issue, reviewing equipment history, or reviewing operating experience to determine if the ball valve, TIP tubing, or penetration flange was the issue.

Corrective Actions: The 2C TIP system was repaired and post maintenance testing was performed to ensure the system would perform its intended function.

Corrective Action References: AR 04228241

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to follow station procedure MA-AA-716-012, "Post Maintenance Testing," was a performance deficiency. Specifically, after performing repairs to the 2C51-J003C penetration flange, the licensee failed to perform a post maintenance test of the 2C TIP system that verified the system was able to perform its intended function and that no new or related problems were created during the repairs. When the 2C TIP system was operated for the first time to calibrate the LPRMs, the probe would not insert past the flange penetration due to damage to tubing caused during the repair.

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, by not performing post maintenance tests that verify systems are able to perform their intended functions or that no new or related problem were created by the maintenance could result in safety-related systems unable to perform their intended functions.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The finding was screened against the Mitigating Systems cornerstone and determined to be of very low safety significance (Green) because the finding did not affect a single reactor protection system trip signal to initiate a reactor scram, did not involve control manipulations that unintentionally added positive reactivity, nor resulted in a mismanagement of reactivity by operators.

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, local leak rate testing personnel believed that the failed test was due to an issue with the penetration flange and maintenance was performed without properly troubleshooting the issue, reviewing equipment history or reviewing operating history to determine if the ball valve, TIP tubing, or penetration flange was the issue. Management viewed the failure as strictly an issue with the LLRT, however, the system function was what was impacted by the maintenance performed and was not tested.

Enforcement:

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

Failure to Incorporate General Electric Hitachi Nuclear Energy Safety Communication 11-05 Criteria into Surveillance Procedures for Control Rod Operability			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000373,05000374/2019002-02 Open/Closed	None (NPP)	71153
<p>The inspectors documented a self-revealed Green finding and associated Non-cited Violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to incorporate Safety Communication (SC) 11-05 friction limits into surveillance procedures to ensure that control rods could perform their safety function. Specifically, licensee-established test procedures did not prohibit the full-stroke insertion friction test methodology for control rods with insert stall flow greater than 5 gallons per minute. Under this condition, the licensee's test procedure did not incorporate all of the applicable test requirements needed to ensure the as-found data could be compared to the site-specific operability limit for control rod friction determined in General Electrical Hitachi Nuclear Energy (GEH) 0000-0143-8665, SC 11-05 Friction Limits for LaSalle Units 1 and 2, dated February 9, 2012.</p> <p><u>Description:</u></p> <p>On August 31, 2018, the licensee commenced a planned shutdown of LaSalle Unit 2 for a maintenance outage. During the shutdown, a manual scram was inserted on LaSalle Unit 2 due to degrading condenser vacuum. All rods inserted with the exception of control rod 30-31, which stalled at position 28. Following the scram, operators were able to insert control rod 30-31 manually using elevated control rod drive water pressure. The licensee conducted extent of condition testing of all control rods prior to startup from the Unit 2 maintenance outage and tested Unit 1 control rods on September 8, 2018.</p> <p>Subsequent control rod friction testing conducted by the licensee, in conjunction with an evaluation performed by GEH, determined that control rod 30-31 experienced 285 pounds force of friction due to channel distortion during the reactor scram. The site-specific operability limit for control rod friction was 350 pounds force. Since the friction experienced on control rod 30-31 was less than the operability limit at the time of the event, the licensee attributed the reduction in the amount of friction required to stop rod motion to degraded control rod drive performance. The licensee concluded in root cause evaluation (RCE) 4169154 that the cause of the stalled control rod was a combination of control rod insert stall flow greater than 5.0 gallons per minute (gpm), an indication of degraded drive performance, and friction caused by fuel channel distortion.</p> <p>The inspectors reviewed generic communications regarding boiling water reactor (BWR) fuel channel distortion and station procedures for fuel channel distortion monitoring. In 2003, GEH issued 10 CFR Part 21 communication SC 03-08, "Interim Surveillance Program for Fuel Channel Bow Monitoring," to ensure that control rod safety-function would not be interrupted by fuel channel distortion. In response, the licensee established a channel distortion monitoring program and implemented surveillance test LOS-RD-SR7, Channel Interference Monitoring. In 2011, GEH updated channel distortion friction limits to consider the effects of a seismic event in 10 CFR Part 21 communication SC 11-05, "Failure to Include Seismic Input in Channel-Control Blade Interference Customer Guidance," Revision 0. General Electrical Hitachi Nuclear Energy provided site-specific friction limits to LaSalle in GEH 0000-0143-8665 on February 9, 2012. The licensee incorporated the site-specific friction limits into surveillance procedure LOS-RD-SR7 but did not ensure that bounding</p>			

conditions discussed below were satisfied during testing, "Channel Interference Monitoring," Revision 21, as a criteria for control rod operability on February 24, 2012.

Currently, LaSalle uses channel distortion testing methods and criteria outlined in SC 11-05, Revision 2, as updated by GEH 003N5233, "Shaker Test Project - Updated Fuel Channel Bow Surveillance Recommendations and Friction Limits for BWR/2-5 Plants," Revision 0, in conjunction with the site-specific friction limits established in GEH 0000-0143-8665. General Electrical Hitachi Nuclear Energy methodology allows for two control rod friction tests: settle testing, a go/no-go test for channel friction in excess of the control blade weight, and full-stroke insertion testing, a test that utilizes a computational tool provided by GEH that uses control rod travel speed to quantify control rod friction. Historically, LaSalle had elected to use full-stroke insertion testing for monitoring channel distortion as this method provides a quantitative measure of friction that can be trended, correlated with testing frequencies, and compared to the site-specific friction limit for the purpose of operability determination. The inspectors reviewed RCE 4169154, LOS-RD-SR7, and GEH 0000-0143-8665. The inspectors noted that GEH 0000-0143-8665 contained a bounding condition that control rod drive insert stall flow was a maximum of 5 gpm to determine the site-specific operability limit for control rod friction. Additionally, the inspectors noted that although the LOS-RD-SR7 contains a discussion that the test full-stroke insertion test methodology becomes non-conservative when insert stall flow exceeds 5 gpm, there are no steps to prohibit full-stroke insertion testing under non-conservative conditions. As documented in RCE 4169154, the licensee utilized LOS-RD-SR7 to conduct full-stroke insertion channel distortion testing of control rod 30-31 in September and December of 2017 after control rod 30-31 exhibited signs of channel distortion. During these tests control rod 30-31 exhibited friction, but not sufficient for it to be declared inoperable. On both occasions control rod 30-31 had an insert stall flow greater than 5 gpm, a condition exceeding the bounding condition established in GEH 0000-0143-8665, which made the test methodology invalid. Performing settle testing instead of full-stroke insertion channel distortion testing when the bounding conditions were not met would have provided meaningful results, allowing the licensee to take actions that would have allowed control rod 30-31 to fully insert during the scram.

Corrective Actions: The licensee revised the fuel channel distortion monitoring program to test control rod drives with insert stall flow greater than 5 gpm with the settle test method and to declare the control rod inoperable if the settle test is not satisfactory. To remain operable, control rods must have a satisfactory settle test, scram time test, and must be added to the channel distortion monitoring program. All rods with measured friction get added to the quarterly channel distortion monitoring populations. Also, guidance for selecting control rod drives for replacement during refueling outages were revised and an expanded scope of control rod drive replacements was conducted in the Unit 2 spring 2019 refueling outage.

Corrective Action References: RCE 4169154

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to incorporate SC 11-05 friction limits into surveillance procedures to ensure that control rods could perform their safety function was a performance deficiency. Specifically, established test procedures did not prohibit full stroke insertion friction test methodology for control rods with insert stall flow greater than 5 gallons per minute. Under this condition, the licensee's test procedure did not incorporate all of the applicable test requirements needed to ensure the as-found data could be compared to the site-specific operability limit for control rod friction determined in GEH 0000-0143-8665.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power."

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. The inspectors determined that the insufficient information was placed into the procedure in 2012.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Contrary to the above, on February 24, 2012, the licensee failed to assure that testing required to demonstrate that control rods would perform satisfactorily in service was identified and performed in accordance with written test procedures which incorporated the requirements and acceptance limits contained in applicable design documents. Specifically, the limitation on control rod insert stall flow specified in GEH 0000-0143-8665, SC 11-05 Friction Limits for LaSalle Unit 1 and 2, dated February 9, 2012, was not incorporated into LOS-RD-SR7, Channel Interference Monitoring, Revision 21, such that the full stroke insertion friction test methodology was prohibited from use when insert stall flow exceeded 5 gallons per minute.

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

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On July 10, 2019, the inspectors presented the integrated inspection results to Mr. P. Hansett and other members of the licensee staff.
- On May 10, 2019, the inspectors presented the radiation protection inspection results to Mr. J. Washko, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	AR 4257522	Summer Readiness Complete with Portions Unsat (Exceptions)	06/17/2019
	Work Orders	WO 4787437-01	LOS-ZZ-A2 Preparation for Summer Operations Att B	03/25/2019
71111.04	Drawings	M-95	High Pressure Core Spray	AQ
71111.05Q	Fire Plans	PFP FZ 7B1	Unit 1 Diesel Generator Building 710', HPCS Diesel Generator Room, Fire Zone 7B1	1
		PFP FZ 7B2	Unit 1 Diesel Generator Building 710', Division 2 Standby Diesel Generator Room, Fire Zone 7B2	2
		PFP FZ 7B3	Unit 1 Diesel Generator Building 710', Division 1 Standby Diesel Generator Room, Fire Zone 7B3	2
		PFP FZ 7B4	Unit 1 Diesel Generator Building 710', HPCS Standby Diesel Generator Day Tank Room, Fire Zone 7B4	1
		PFP FZ 7B5	Unit 1 Diesel Generator Building 710', Division 2 Standby Diesel Generator Day Tank Room, Fire Zone 7B5	1
		PFP FZ 7B6	Unit 1 Diesel Generator Building 710', Division 1 Standby Diesel Generator Day Tank Room, Fire Zone 7B6	2
	Work Orders	WO 04580125-01	Fire Damper Visual Inspection	04/02/2019
71111.12	Calculations	L-003902	Environmental Qualification Report for 480V MCCs	2
	Corrective Action Documents	AR 4135381	1VX05C Didn't Shut Off When Handswitch Taken to Stop	05/07/2018
		AR 4136375	New Eaton Contactor Found Bound in the Energized State	5/10/2018
71111.12	Engineering Evaluations	EC 397773	Units 1 and 2, MCC Bucket Components Listing	1
	Operability Evaluations	OpEval 18-001; EC 397773 and IR 4200198/4199873	1A DG Soak Back Pump and 136X-2-F6, 1A DG Circulating Oil Pump and 136X-2-C1	7
71111.13	Drawings	M-68	P&ID Service Water System	AT
		M-71	P&ID Fire Protection	BC
		M-71	P&ID Fire Protection	W
	Miscellaneous	WO 1693995-01	Risk Screening/Mitigation Plan: Replace Check Valve OFP206B	03/20/2018
	Procedures	WC-AA-104-F-01	04690769-01 1WS01PB Motor Pull and Ship for Rewind	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Corrective Action Documents	AR 04247017	Instrument Out of Tolerance, 0FT-VC110, Trend Code B3	05/07/2019
		AR 04247094	0FT-VC110 Failed with no Replacement Available	05/07/2019
		AR 04249024	Received Alarms A208 and A308	05/14/2019
		AR 2638202	L1R16 Turbine Bypass Valve Fast Acting Solenoid Valve Failures	1
		AR 3959464	RM-Unit Main Turbine Bypass Valve #2 Did Not Fast-Open	01/05/2017
		AR 4092474	RM-BPV #5 Failed to Exhibit Fast Open Characteristics	01/11/2018
		AR 4236135	Rm-Unit 2 Main Turbine Bypass Valve #2 Did Not Fast-Open	04/04/2019
		AR 4252091	2VY02A D/P Exceeds LOS-DG-SR7 Acceptance Criteria	05/28/2019
	Drawings	1E-1-4222AB	Schematic Diagram High Pressure Core Spray System	5
	Engineering Changes	EC 405581	VY Cooler Heat Transfer with Tubes Plugged for Op Eval 16-003	0
		EC 405589	VY Cooler Pressure Drop for Op Eval 16-003	0
	Procedures	CC-AA-309-1001	Minimum Number of Type A & B Tendons Required for Unit Containment Operability (Analysis No. L-003158)	1
		LOS-TG-M4	Turbine Bypass Valve Surveillance	9
		OP-AA-108-115	Operability Evaluation; Core Standby Core Cooling - Essential Cooling Water (CSCS/VY) Coolers	21
		OP-AA-108-115	Operability Evaluation; Core Standby Core Cooling - Essential Cooling Water (CSCS/VY) Coolers	16
71111.19	Corrective Action Documents	AR 04255353	Lessons Learned during LIS-RI-215	06/07/2019
	Work Orders	WO 4587076	IM LIS-RI-215 U2 RCIC Control System Calibration	06/06/2019
		WO 4641606-01	Auxiliary Electrical Equipment Room Ventilation 'A' Train Recirculation Filter Test, LOS-VC-SR4	05/03/2019
		WO 4641607-01	Control Room Ventilation 'A' Train Recirculation Filter Test, LOS-VC-SR4	05/03/2019
		WO 4641819-01	Control Room Ventilation Emergency Makeup Train Charcoal Filter Train Leak Test, LOS-VC-SR3	05/03/2019
		WO 4641820-01	Control Room Ventilation Emergency Makeup Train 'A' HEPA Filter Leak Test	05/03/2019
		WO 4885900-01	Control Room Emergency Makeup Unit Train 'A' Operability Test, LOS-VC-M1, Attachment A	05/03/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.22	Procedures	LOS-RH-Q1	U2 CRHR System Biennial Comprehensive IST Pump Test	04/18/2019
	Work Orders	WO 4622188-01	U2 RR System Performance (After BOC Startup)	03/27/2019
		WO 4664578	U1 RCIC System Biennial Comprehensive IST Pump Test	06/25/2019
71124.04	Corrective Action Documents	AR 04223218	Release of Individual with Positive Whole Body Count	02/24/2019
	Miscellaneous	NCS-17-001	Determination of Personnel Dosimetry LLD Values	11/13/2017
	Procedures	RP-AA-203-1001	Personnel Exposure Investigations	10
		RP-AA-210	Dosimetry Issue, Usage, and Control	29
		RP-AA-220	Bioassay Program	13
RP-AA-220-001		Collection and Handling of In Vitro Bioassay Samples	2	
71124.05	Calibration Records	Calibration Certificate 001110578	Eberline AS2E/NRD Asset Number 0015420	07/20/2018
		Calibration Certificate 0011126366	Bicron Micro REM Asset Number 0014509	09/26/2018
		Calibration Certificate 0011142633	Ludlum 3030P Asset Number 0012309	12/16/2018
		Calibration Certificate 124019SAFL	MDH Control Unit 2025 Serial Number 4097 Electrometer/Ion Chamber 20X5-180 Serial Number 4097 Electrometer/Ion Chamber 20X5-3 Serial Number 5801	07/09/2018
		Calibration Certificate Number 001105573	Eberline RO20AA Asset Number 0014101	10/17/2017
		Calibration Certificate Number 0011105360	MGP Telepole WR; Asset Number 078879	9/24/2018
		Calibration Certificate Number 0011111092	Telepole Serial Number 6613-103	08/24/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Calibration Certificate Number 0011119414	MGP RAM GAM 1 Asset Number 0012622	09/14/2018
		Calibration Certificate Number 0011131503	Thermo Electron AMS-4 Asset Number 0012622	10/20/2018
		Calibration Certificate Number 001144408	Ludlum 177 Serial Number 327143	01/16/2019
		RP-AA-229 Attachment 1	FASTSCAN Calibration Acceptance Criteria	08/06/2018
		RP-AA-232-1001 Attachment 1	ACCUSCAN II Calibration Acceptance Criteria	08/06/2018
		RP-AA-700-1215 Attachment 5	Calibration Data Sheet RADeCO HD-29A Serial Number 6362	11/14/2018
		RP-AA-700-1235 Attachment 3	PM-12 Calibration Data Sheet Serial Number 1204PM1255	12/20/2018
		RP-AA-700-1239 Attachment 2	SAM-12 Calibration Record Serial Number 12160	11/16/2018
	Corrective Action Documents	AR 04247983	Procedure Compliance Issue RP-AA-700 Section 4.9.5.5	05/10/2019
	Procedures	NISP-RP-001	Portable Survey Instruments	1
		RP-AA-700	Controls for Radiation Protection Instrumentation	6
	Self-Assessments	AR 04093888	NRC RP Baseline Inspection Self Assessment (IP 71124.05)	03/13/2019
	Work Orders	01794501-01	Post Accident Division II Containment Gross Gamma Rad Monitor	06/06/2017
		01804134-01	Post Accident Division I Containment Gross Gamma Radiation Monitor	05/18/2017
		01876430-01	Unit 2 Post Accident Division II Gross Gamma Radiation Monitor	04/27/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71151	Miscellaneous	CY-AA-130-3010-F-01	Dose Equivalent Iodine Determination	7/1/2018 - 3/31/2019
		LS-AA-2140 Attachment 1	NRC Occupational Exposure Control Effectiveness	10/1/2018 - 3/31/2019
71153	Procedures	PI-AA-125-1001	Low Power TIP Set not Completed Due to TIPs Out of Service (Issue Report 4228241)	Revision 3
	Work Orders	WO 1809824-01	2C51-J004C Tip Ball Valve LTS-100-42 As Found Failure-Repair	12/14/2016
		WO 1809824-05	2C51-J004C Tip Ball Valve LTS-100-42 As Found Failure-Repair	03/05/2019
		WO 4604994-01	LLRT, "C" Tip Ball Valve 2C51-J004C	01/29/2019