



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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August 3, 2017

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

**SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2—NRC INTEGRATED  
INSPECTION REPORT 05000373/2017002 AND 05000374/2017002**

Dear Mr. Hanson:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your LaSalle County Station, Units 1 and 2. On July 12, 2017, the NRC inspectors discussed the results of this inspection with Mr. H. Vinyard, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings did not involve a violation of NRC requirements.

If you disagree with the 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 the 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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Karla Stodter, Chief  
Branch 1  
Division of Reactor Projects

Docket Nos. 50-373; 50-374  
License Nos. NPF-11; NPF-18

Enclosure:  
IR 05000373/2017002; 05000374/2017002

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Letter to Bryan Hanson from Karla Stoedter dated August 3, 2017

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2—NRC INTEGRATED  
INSPECTION REPORT 05000373/2017002 AND 05000374/2017002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000373; 05000374  
License Nos: NPF-11; NPF-18

Report No: 05000373/2017002; 05000374/2017002

Licensee: Exelon Generation Company, LLC

Facility: LaSalle County Station, Units 1 and 2

Location: Marseilles, IL

Dates: April 1 through June 30, 2017

Inspectors: R. Ruiz, Senior Resident Inspector  
C. Phillips, Acting Senior Resident Inspector  
C. Hunt, Resident Inspector  
J. Wojewoda, Acting Resident Inspector  
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Management Agency)

Approved by: K Stuedter, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

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## SUMMARY

Inspection Report 05000373/2017002, 05000374/2017002; 04/01/2017 – 06/30/2017; LaSalle County Station, Units 1 & 2; Identification and Resolution of Problems, and Follow-Up of Events and Notices of Enforcement Discretion.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of U.S. Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

### **Cornerstone: Initiating Events**

Green. A self-revealed finding of very low safety significance was identified for the failure to implement a preventive maintenance strategy for main generator auxiliaries in accordance with MA-AA-716-210. Specifically, a performance centered maintenance template was issued in 2004 that required 10 year inspections for stator cooling heat exchanger isolation valves, but the maintenance strategy was never implemented. As a result, 2GC-Y08 had a stem-to-disc separation that ultimately led to a manual reactor scram on January 23, 2017. As part of the corrective actions, the licensee shifted to the standby stator cooling heat exchanger and restarted the reactor on January 25, 2017. The performance deficiency was documented in the licensee's corrective action program (CAP).

The performance deficiency was more than minor because it was associated with the Initiating Events Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the performance deficiency resulted in a reactor scram. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding was of very low safety significance because although the performance deficiency caused a reactor scram, it did not result in the loss of mitigation equipment relied upon to transition the plant from the onset of the scram to a stable shutdown condition. Although the performance deficiency occurred in 2005, the licensee performed a vulnerability review of the stator cooling system in 2015 that did not identify 2GC-Y08 as critical. Therefore, the inspectors determined that the finding represented present performance. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of work management where the organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee failed to plan and execute preventive maintenance for valve 2GC-Y08. (Section 4OA3)

## **Cornerstone: Mitigating Systems**

Green. An NRC-identified finding of very low safety significance was identified for the failure to implement a preventive maintenance strategy for the 1B residual heat removal injection valve low pressure permissive switch in accordance with procedure ER-AA-200-1001, "Equipment Classification," Revision 3. The switch failed and was replaced on February 18, 2017. The performance deficiency was documented in the licensee's CAP.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the inoperability of an emergency core cooling system train of equipment. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance because all the screening questions associated with IMC 0609, Appendix A, Exhibit 2, were answered "No." The switch was replaced and returned to service within 24 hours of when it was initially identified as a problem. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current licensee performance. (Section 4OA2)

## REPORT DETAILS

### Summary of Plant Status

#### **Unit 1**

The unit began the inspection period operating at full power. On May 20, 2017, power was reduced to about 50 percent to perform a combined repair of Intermediate Valve Number 3 and a control rod sequence exchange. The unit returned to full power the next day. The unit remained at full power until June 22, 2017, when the licensee began an outage to replace the high pressure core spray injection valve internals. The unit was returned to full power on June 28, 2017, and remained as such through the end of the inspection period.

#### **Unit 2**

The unit began the inspection period operating at full power. On May 27, 2017, power was reduced to approximately 75 percent for a control rod sequence exchange. The unit returned to full power the next day and remained so until June 6, 2017, when the unit was shut down to investigate a recirculation pump motor lube oil issue. The unit was returned to full power June 10, 2017. Power was reduced to approximately 85 percent beginning June 16, 2017, to perform a control rod-pattern adjustment. The unit was returned to full power the next day and remained as such through the end of the inspection period.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness**

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness of Offsite and Alternate Alternating Current Power Systems

##### a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events;
- explanations for the events;
- estimates of when the offsite power system would be returned to a normal state; and
- notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite

alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;
- compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station CAP procedures. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition—Severe Thunderstorm Watch

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for April 10, 2017, the inspectors reviewed the licensee’s overall preparations/protection for the expected weather conditions. On April 10, the inspectors walked down the switchyard, in addition to the licensee’s emergency AC power systems, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff’s preparations against the site’s procedures and determined that the staff’s actions were adequate. The inspectors focused on plant-specific design features and the licensee’s procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station CAP action procedures. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in IP 71111.01–05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- common diesel generator (DG) Division 1;
- Unit 2 A DG; and
- Unit 2 reactor core isolation cooling (RCIC) during high pressure core spray (HPCS) outage.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specifications (TS) requirements, outstanding work orders (WOs), Action Requests (ARs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

.2 Semiannual Complete System Walkdown

a. Inspection Scope

On June 30, 2017, the inspectors performed a complete system alignment inspection of the Unit 1 RCIC system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the

licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- fire zone 4D2, Unit 2, cable spreading room, 749' 0";
- fire zone 7B3, Unit 1, Division 1 standby DG room, 710' 0";
- fire zone 3H4, Unit 2, RCIC low pressure core spray (LPCS), 694' 6";
- fire zone 7C6, Unit 1, Division 1 residual heat removal (RHR) service water pump room, 674' 0"; and
- fire zone 2I4, Unit 1, RCIC LPCS, 694' 6".

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's CAP documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 1 Division 1 and Division 2 core standby cooling system pump rooms.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one internal flooding sample as defined in IP 71111.06–05

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On June 12, 2017, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;

- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On June 9, 2017, the inspectors observed operators perform a Unit 2 shutdown for emergent Unit 2 B recirculation pump work. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- Unit 1 RCIC.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with Title 10 of the *Code of Federal Regulation* (CFR) 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- emergent work for Unit 2 B DG compressor/relief valve malfunction/repair;

- Unit 2 B DG room cooler cleaning;
- Unit 1 LPCS spray minimum flow valve failed shut;
- Unit 2 yellow risk for Division II RHR service water work window; and
- Unit 2 risk assessment for emergent work for Unit 2 B recirculation pump.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Documents reviewed during this inspection are listed in the Attachment to this report.

These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13–05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- control room emergency filtration system with door seal degradation;
- Unit 1 HPCS min-flow valve stem rotation check;
- motor-sizing effect of safety-related 250 volts direct current batteries;
- Unit 1 HPCS injection valve (1E22–F004);
- Unit 2 HPCS injection valve (2E22–F004); and
- Unit 2 refuel floor fire detection panel (2FP10J) functional evaluation.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of CAP documents to verify that the licensee was identifying and correcting any deficiencies associated with

operability evaluations. Issues associated with the Unit 1 and Unit 2 HPCS injection valves are documented in LaSalle Special Inspection Report 05000374/2017009. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted six samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance testing (PMT) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Unit 2 HPCS room cooler;
- Unit 1 C RHR service water outlet valve replacement;
- Unit 1 LPCS flow switch (1E21–N004) replacement following failure;
- Unit 1 electrohydraulic control pressure switch replacement; and
- Unit 1 HPCS injection valve.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various U.S. Nuclear Regulatory Commission (NRC) generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed CAP documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted five post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Other Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities for a scheduled outage on Unit 1 that began on June 22, 2017, and continued through June 28, 2017. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed or reviewed the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, startup and heatup activities, and identification and resolution of problems associated with the outage. The outage was conducted to inspect and repair the Unit 1 HPCS injection valve, 1E22-F004. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one other outage sample as defined in IP 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Unit 2 reactor vessel high water level and turbine/feedwater pump trip functional test LIS-FW-401 (Routine);
- Unit 2 B DG idle start (Routine);
- Unit 2 A RHR inservice testing pump test (IST); and
- Unit 1 B RHR biennial comprehensive pump test (IST).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the UFSAR, procedures, and applicable commitments;

- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted two routine surveillance testing samples and two in-service test samples as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on April 21, 2017, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into

the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06–05.

b. Findings

No findings were identified.

.2 Training Observation

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on June 12, 2017, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the CAP. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06–05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

.1 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1904, or controlled in accordance with 10 CFR 20.1905.

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20. For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801 and 10 CFR 20.1802.

The inspectors evaluated whether the licensee established a process for monitoring the impact of low-level radioactive waste storage that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors evaluated the licensee's program for container inventories and inspections. The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

These inspection activities constituted one complete sample as defined IP 71124.08–05.

b. Findings

No findings were identified.

.2 Radioactive Waste System Walk-Down (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in plant and/or vendor manuals.

The inspectors reviewed administrative and/or physical controls to assess whether equipment which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59.

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the UFSAR were reviewed and documented in accordance with 10 CFR 50.59 or that changes to vendor equipment were made in accordance with vendor manuals. The inspectors also assessed the impact of these changes on radiation doses to occupational workers and members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers and assessed whether the waste stream mixing, sampling, and waste concentration averaging were consistent with the process control program, and provided representative samples of the waste product for the purposes of waste classification.

The inspectors evaluated whether tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's process control program correctly described the current methods and procedures for dewatering and waste stabilization.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.3 Waste Characterization and Classification (02.04)

a. Inspection Scope

For select waste streams, the inspectors assessed whether the licensee's radiochemical sample analysis results were sufficient to support radioactive waste characterization as required by 10 CFR Part 61. The inspectors evaluated whether the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61.

The inspectors evaluated whether the licensee had established and maintained an adequate quality assurance program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56.

These inspection activities constituted one complete sample as defined in IP 71124.08-05.

b. Findings

No findings were identified.

.4 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors reviewed the technical instructions presented to workers during routine training. The inspectors assessed whether the licensee's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities. The inspectors assessed whether shippers were knowledgeable of the shipping regulations and demonstrated adequate skills to accomplish package preparation requirements. The inspectors evaluated whether the licensee was maintaining shipping procedures in accordance with current regulations. The inspectors assessed whether the licensee was meeting the expectations in NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and 49 CFR Part 172, Subpart H, "Training."

The inspectors evaluated whether the requirements for Type B shipment Certificates of Compliance had been met. The inspectors determined whether the user was a registered package user and had an NRC-approved quality assurance program. The inspectors assessed whether procedures for cask loading and closure were consistent with vendor procedures.

The inspectors assessed whether non-Type B shipments were made in accordance with the package quality documents.

The inspectors assessed whether the receiving licensee was authorized to receive the shipment packages.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.5 Shipping Records (02.06)

a. Inspection Scope

The inspectors reviewed select shipments to evaluate whether the shipping documents indicated the proper shipper name; emergency response information and a 24–hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and United Nations number. The inspectors assessed whether the shipment marking, labeling, and placarding was consistent with the information in the shipping documentation.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.6 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security**

#### 4OA1 Performance Indicator Verification (71151)

##### .1 Reactor Coolant System Leakage

###### a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system (RCS) leakage performance indicator (PI) for Units 1 and 2 for the second quarter 2016 through the first quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, action request (AR), event reports and NRC Integrated Inspection Reports for April 2016 through March 2017 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's AR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two reactor coolant system leakage samples as defined in IP 71151-05.

###### b. Findings

No findings were identified.

#### 4OA2 Identification and Resolution of Problems (71152)

##### .1 Routine Review of Items Entered into the Corrective Action Program

###### a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's CAP as a result of the inspectors' observations; however, they are not discussed in this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter.

###### b. Findings

No findings were identified.

## .2 Semiannual Trend Review

### a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of January 1, 2017, through June 30, 2017, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted one semiannual trend review inspection sample as defined in IP 71152.

### b. Findings

No findings were identified.

### c. Observations

As part of this review, the inspectors initially focused on issues with a number of failed static-o-ring (SOR) differential pressure switches. However, what this revealed was a trend identified by the inspectors for the failure to identify and perform preventive maintenance (PM) on critical plant equipment in accordance with the established PM program.

On February 18, 2017, the licensee identified that the Unit 1 B residual heat removal (RHR) pump low pressure injection permissive differential pressure switch (1E12-N413B) failed a calibration check outside of the TS allowable value. The licensee's work group evaluation stated that the failure was due to rust and that this was an isolated case and that there was no extent of condition. The inspectors were not satisfied with this evaluation.

Further questioning revealed that the switch was from the original installation and had no PM schedule for replacement. The switch was classified as "critical" at the time of its failure which meant it was not a run to failure piece of equipment per licensee procedure ER-AA-200-1001, "Equipment Classification," Revision 3, Step 4.1.6. This issue is discussed further in Section 4OA2.3 of this report.

When questioned about why there was no extent of condition, the licensee wrote ARs to replace the other RHR low pressure permissive switches in the A and C channels. However, the inspectors pointed out that this issue was not just a low pressure

permissive issue but a broader, SOR issue since these SOR switches were used in multiple different applications onsite. Subsequently, the licensee wrote an additional nine ARs documenting switches in the low pressure core spray (LPCS) system that also needed to be replaced because there were no PMs associated with the switches.

In Section 4OA3.3 of this report, the inspectors documented a finding that discussed the failure to implement a PM strategy for main generator auxiliaries in accordance with procedure MA-AA-716-210, "Performance Centered Maintenance (PCM) Process." Specifically, the stator cooling heat exchanger isolation valve 2GC-Y08 was classified as "run-to-maintenance," meaning that the licensee would only perform maintenance as required instead of preventive maintenance. Per ER-AA-200-1001 "Equipment Classification," Attachment 1, "Component Criticality Classification," valve 2GC-Y08 should have been classified as "critical" because its failure could cause a reactor scram. Since 2GC-Y08 is a critical valve, the 10-year inspection should have been implemented and performed. However, since it was improperly classified as "run-to-maintenance," the Performance Centered Maintenance template was never actually implemented and the valve was not inspected. If the valve was subject to 10-year inspections, then the stem and disc could have been replaced prior to the scram on January 23, 2017.

In the 2016 fourth quarter NRC Integrated Inspection Report 05000373/2016004; 05000374/2016004, the inspectors documented a non-cited violation, NCV 05000373/2016004-03, "Failure to Perform Preventive Maintenance Resulting in Two Subsequent Unit 1 RCIC [reactor core isolation cooling] Turbine Trips during Surveillance Testing" for the licensee's failure to perform preventive maintenance. The electronic governor-remote (EG-R) hydraulic actuator was the part of the turbine governor that converts electrical signals from the turbine's speed sensing circuitry into hydraulic pressure used to adjust the position of the turbine governor valve and ultimately the speed of the turbine. The licensee did not have a formal PM schedule specific to the EG-R actuator directing its replacement on an interval that would prevent the reoccurrence of fouling similar to what had occurred on June 18, 1990. Guidance for replacing the EG-R actuator was contained in the RCIC turbine overhaul procedure, LMP-RI-02; however, the licensee changed the frequency of LMP-RI-02 on four separate occasions without analyzing the effects that these changes would have on the performance of the EG-R actuator.

In the 2017 first quarter NRC Integrated Inspection Report 05000373/2017001; 05000374/2017001, the inspectors documented another violation, NCV 05000373/2017001-02, "Failure to Perform Preventive Maintenance Resulted in Stem-to-Disc Separation of Safety-Related Valve." Specifically, multiple extensions of PM due dates with insufficient technical justification allowed the PM program to be implemented in a manner that was inappropriate to the circumstances and resulted in the failure of the Unit 2 B DG cooling water strainer backwash valve. This failure resulted in a reactor scram.

The inspectors questioned if the licensee had identified this trend. The licensee had written AR 3990612, "Scope Expansion on Critical Component Failure Commonalities," dated March 28, 2017, which was part of a required annual review of critical equipment failures. As part of this AR, the licensee performed a common cause analysis which was completed on April 17, 2017. The common cause analysis determined that age-related component and subcomponent degradation was a factor in the number of equipment

related failures that had occurred at the station. Within the analysis, the licensee stated that preventive maintenance was a possible factor in the number of age-related component and subcomponent degradation. Corrective actions written included the generation of a plan to reduce the number of late PM items and to put together a cross functional team to evaluate and review the number of PM deferrals and extensions that have occurred in the past. Neither of these corrective actions were scheduled for completion by the end of the inspection period. The inspectors noted that although these actions may help the performance of PM actions in a timely manner, the majority of the examples listed above had no PMs assigned to the equipment at all.

The inspectors concluded during this review that the licensee's identification of issues and extent of condition, evaluation of issues, and corrective actions did not appear to be substantial enough to resolve this trend. The inspectors considered the failure to identify and perform PM on critical plant equipment a PM program weakness. The enforcement aspects for the specific SOR and stator cooling heat exchanger isolation valve examples discussed are documented later in this report. The licensee captured this observation in AR 4032656, "NRC Observation – PM Program Needed for Critical Components."

.3 Annual Follow-Up of Selected Issues: Static-O-Ring Preventive Maintenance Issue

a. Inspection Scope

The inspectors selected the following ARs for in-depth review:

- AR 3975899, "1E12–N413B Failed Outside LCO." [Limiting Condition of Operation]

As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above ARs and other related ARs:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause, and previous occurrences;
- evaluation and disposition of operability/functionality/reportability issues;
- classification and prioritization of the resolution of the problem commensurate with safety significance;
- identification of the root and contributing causes of the problem; and
- identification of corrective actions, which were appropriately focused to correct the problem;
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- effectiveness of corrective actions taken to preclude repetition; and
- evaluate applicability for operating experience and communicate applicable lessons learned to appropriate organizations.

The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

This review constituted one in-depth problem identification and resolution inspection sample as defined in IP 71152.

b. Findings

Failure to Implement a Preventive Maintenance Strategy for Unit 1 B RHR Low Pressure Permissive Differential Pressure Switch

Introduction: The inspectors identified a finding of very low safety significance for the licensee's failure to implement a PM strategy for the Unit 1 B RHR injection valve low pressure permissive switch in accordance with licensee procedure ER-AA-200-1001, "Equipment Classification," Revision 3.

Description: On February 18, 2017, the licensee identified that the Unit 1 B RHR pump low pressure injection permissive differential pressure switch (1E12-N413B) failed a calibration check outside of the TS allowable value. The licensee's work group evaluation stated that the failure was due to rust within the switch, the presence of rust was an isolated case, and there was no extent of condition since the failure was isolated.

The inspectors were not satisfied with this evaluation. Further questioning revealed the switch was from the original installation and had no PM schedule for replacement. The switch was classified as "critical" at the time of its failure which meant it was not a run to failure piece of equipment per procedure ER-AA-200-1001, "Equipment Classification," Revision 3, Step 4.1.6.

When questioned about no extent of condition, the licensee wrote ARs to replace the other RHR low pressure permissive switches in the A and C channels. However, this issue was not just a low pressure permissive issue but a broader SOR issue since the SOR switches were being used in multiple applications within the plant. Subsequently, the licensee wrote an additional nine ARs documenting the presence of identical SOR switches in the LPCS system that also needed to be replaced because there were no PMs associated with the switches.

The inspectors concluded during this review that the licensee's evaluation of issues, extent of condition, and corrective actions to address conditions adverse to quality were not substantial enough to resolve this issue without the input of the resident inspectors.

Analysis: The inspectors determined that the failure to implement a PM strategy for the Unit 1 B RHR injection valve low pressure permissive switch in accordance with procedure ER-AA-200-1001, "Equipment Classification," Revision 3, was a performance deficiency. Using guidance in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined that the performance deficiency was more than minor, and thus a finding, because it was associated with the Mitigating System Cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the inoperability of an emergency core cooling system train.

In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because: the performance deficiency was not a design or qualification issue; it did not represent a loss of the system function; the train was

neither inoperable for greater than its allowed outage time nor was it inoperable for greater than 24 hours; and was not part of an external event mitigating system. The switch was replaced and returned to service within 24 hours of when it was initially identified as a problem. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current licensee performance.

Enforcement: The inspectors did not identify a violation of regulatory requirements associated with this finding. The licensee entered this issue into its CAP as AR 4027610 and added PM items for the A, B, and C RHR trains to replace the low pressure permissive switches every 10 years in accordance with the PM template. In addition, the licensee wrote ARs to change the PM schedule for replacement of nine SOR switches in the LPCS system. **(FIN 05000373/2017002-01, Failure to Implement a Preventive Maintenance Strategy for 1B RHR Low Pressure Permissive Pressure Switch)**

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000373/2017001-00: Reactor Core Isolation Cooling System Inoperable Longer Than Allowed by the Technical Specifications Due to Low Suction Pressure Trips

This event occurred on October 18, 2016, while Unit 1 was in Mode 1 at 100 percent power. The Unit 1 RCIC system tripped on low suction pressure during a normal start that was being performed in accordance with the RCIC system pump operability valve test procedure, following completion of scheduled maintenance activities. Repairs were performed that restored the system to operability on October 20, 2016. The cause of the RCIC inoperability was the failure to perform PM of the RCIC EG-R hydraulic actuator. An NCV was written due to the events described in this Licensee Event Report (LER) as NCV 05000373/2016004-03, "Failure to Perform Preventive Maintenance Resulting in Two Subsequent Unit 1 RCIC Turbine Trips During Surveillance Testing." Documents reviewed are listed in the Attachment to this report. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

.2 (Closed) Licensee Event Report 05000373/2017002-00; 05000374/2017002-00: Secondary Containment Inoperable Due to Interlock Doors Open

On January 18, 2017, Units 1 and 2 were each in Mode 1 at 100 percent power with movement of irradiated fuel in progress. At 8:56 p.m., both air-lock doors of the Unit 2 reactor building 710' elevation air-lock opened simultaneously for approximately five seconds during personnel ingress.

Surveillance Requirement 3.6.4.1.2 to verify one secondary containment access door in each access opening is closed was not met. Secondary containment was declared inoperable for the period of time that both interlock doors were open. Technical Specification 3.6.4.1 required action to restore secondary containment to OPERABLE status within four hours was entered and exited. Technical Specification 3.6.4.1 Required Action C.1 to immediately suspend movement of irradiated fuel in secondary containment was entered and exited.

The cause of the interlock failure was the intermittent failure of a circuit board which was designed to prevent more than one door to be open at a time. Similar previous interlocked door circuit board failures have been identified, through formal failure

analysis, to have been caused by degraded relays integral to the circuit board. A causal investigation for an event in 2015 first identified interlock circuit cards as a cause, and a causal investigation for an event in 2016 identified relays on the circuit card as the specific cause of the failures. Corrective actions from the 2016 investigation had been ongoing to upgrade interlock door circuit cards with cards that had improved relays. The interlock that failed was scheduled to have its circuit card replaced the week following this event as a corrective action from the previous interlock failure event in 2016.

This event was reported in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D) as an event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material or mitigate the consequences of an accident. Documents reviewed are listed in the Attachment to this report. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153.

.3 (Closed) Licensee Event Report 05000374/2017001-00: Manual Reactor Scram Due to Turbine-Generator Run-Back Caused by Stem-Disc Separation in Stator Water Cooling Heat Exchanger Inlet Valve

a. Inspection Scope

On January 23, 2017, a manual reactor scram was inserted on Unit 2 in response to a generator run-back. The run-back was caused by a low water pressure signal in the generator stator winding cooling (GC) system. The manual scram was required by procedure LOA-GC-201, "U2 Generator Stator Cooling Abnormal," Revision 15. All control rods fully inserted as expected and all major equipment functioned as designed.

The licensee determined that the cause of this event was a stem-disc separation of a valve in the GC system which blocked cooling water flow and caused the low pressure condition which caused the run-back. As corrective actions, the licensee repaired the affected valve and updated the maintenance strategy to perform routine PM.

The licensee notified the NRC of the reactor scram on January 23, 2017, call (Event Notification 52505) as required by 10 CFR 50.72(b)(2)(iv)(B). The inspectors reviewed the LER and identified one finding. Documents reviewed are listed in the Attachment to this report. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153.

b. Finding

Failure to Implement a Preventive Maintenance Strategy for Main Generator Auxiliaries

Introduction: A self-revealed finding of very low safety significance was identified for the licensee's failure to implement a PM strategy for main generator auxiliaries in accordance with procedure MA-AA-716-210, "Performance Centered Maintenance (PCM) Process." Specifically, a performance centered maintenance template was issued in 2004 that required 10-year inspections for stator cooling heat exchanger isolation valves, but the maintenance strategy was never implemented.

As a result, stator cooling heat exchanger isolation valve 2GC-Y08 had a stem-to-disc separation that ultimately led to a manual reactor scram on January 23, 2017.

Description: On January 23, 2017, control room operators manually scrambled the reactor following an automatic generator runback. The runback was caused by a low stator water pressure signal. The scram was not complicated, with all equipment performing as designed. The licensee shifted to the standby stator cooling heat exchanger and restarted the reactor on January 25, 2017. The stator cooling system was shut down on February 6, 2017, during a scheduled refueling outage. The licensee discovered that valve 2GC-Y08 had its disc separate from the stem, which blocked water flow, causing the stator water low pressure condition. The licensee performed a root cause evaluation to determine the cause of the valve failure. The disc of valve 2GC-Y08 was threaded into the stem and secured with an anti-rotation pin, so the threads and the pin both failed, allowing the disc to separate.

In 2004, the licensee issued MA-AA-716-210, "Performance Centered Maintenance (PCM) Process," Revision 14. The template recommended a 10-year inspection for the valve stem and disc because its failure could cause a reactor scram. Valve 2GC-Y08 was classified as "run-to-maintenance," meaning the licensee would only perform maintenance as required instead of preventive maintenance. Per ER-AA-200-1001, "Equipment Classification", Attachment 2, "Run-to-Maintenance Analysis," valve 2GC-Y08 should have been classified as "critical" because its failure could cause a reactor scram. Since valve 2GC-Y08 was a critical component, the 10-year inspection should have been implemented and performed. However, since it was improperly classified as "run-to-maintenance", the Performance Centered Maintenance template was never actually implemented and the valve was not inspected. If the valve were subject to 10-year inspections, the stem and disc could have been replaced prior to the scram on January 23, 2017.

The site performed a vulnerability review of the stator cooling system in 2015. The licensee did not identify that the heat exchanger isolation valves had been improperly classified as "run-to-maintenance" instead of "critical." The last maintenance that was performed on valve 2GC-Y08 was in 2002, which was beyond the 10-year recommended inspection of the stem and disc.

Analysis: The inspectors determined the failure to implement a PM strategy for main generator auxiliaries in accordance with procedure MA-AA-716-210, Step 4.7, was a performance deficiency. Specifically, the licensee did not implement a Performance Centered Maintenance strategy that required 10-year inspections for stator cooling valves whose failure resulted in a manual reactor scram on January 23, 2017. Using guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined that the performance deficiency was more than minor, and thus a finding, because it was associated with the Initiating Events cornerstone attribute of equipment performance and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the performance deficiency resulted in a reactor scram.

In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety

significance (Green) because, although the performance deficiency caused a reactor scram, it did not result in the loss of mitigation equipment relied upon to transition the plant from the onset of the scram to a stable shutdown condition.

Although the performance deficiency occurred in 2005, the licensee performed a vulnerability review of the stator cooling system in 2015 that did not identify 2GC–Y08 as critical. Therefore, the inspectors determined that the finding represented present performance. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of work management where the organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee failed to plan and execute PM for valve 2GC–Y08. [H.5]

Enforcement: The inspectors did not identify a violation of regulatory requirement associated with this finding due to the stator water heat exchanger valve being classified as a non-safety related component. The licensee entered this issue into its CAP as AR 3981145. As corrective actions, the licensee performed inspections and replacement of stem and disc assemblies for the other stator water cooling valves in Unit 2 and plans to do the same for Unit 1 during the next refueling outage. Additionally, the licensee planned to perform a critical component classification for stator cooling heat exchanger isolation valves. **(FIN 05000374/2017002–02, Failure to Implement a Preventive Maintenance Strategy for Main Generator Auxiliaries)**

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On July 12, 2017, the inspectors presented the inspection results to Mr. H. Vinyard, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

##### .2 Interim Exit Meetings

Interim exits were conducted for inspection results for the Radiation Safety Program review with Mr. H. Vinyard, Plant Manager, on May 12, 2017.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

W. Trafton, Site Vice President  
H. Vinyard, Plant Manager  
J. Kowalski, Engineering Director/Director Site Maintenance  
J. Keenan, Engineering Director  
G. Ford, Regulatory Assurance Manager  
J. Moser, Radiation Protection Manager  
A. Schierer, Programs Engineering Manager  
M. Hayworth, Emergency Preparedness Manager  
J. Stovall, Operations Director  
L. Simpson, Corporate Senior Engineering Manager  
G. Brumbelow, Emergency Preparedness Coordinator  
S. Tanton, Design Engineering Manager  
R. Conley, Radiation Engineering Manager  
D. Wright, Operations Training Manager  
D. Anthony, Exelon NDES Manager West

#### U.S. Nuclear Regulatory Commission

K. Stoedter, Chief, Reactor Projects Branch 1

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

- |                     |     |  |
|---------------------|-----|--|
| 05000373/2017002-01 | FIN | Failure to Implement A Preventive Maintenance Strategy for 1B RHR Low Pressure Permissive Pressure Switch (Section 4OA2) |
| 05000374/2017002-02 | FIN | Failure to Implement a Preventive Maintenance Strategy for Main Generator Auxiliaries (Section 4OA3)                     |

### Closed

- |  |     |  |
|--|-----|--|
| 05000373/2017002-01                        | FIN | Failure to Implement A Preventive Maintenance Strategy for 1B RHR Low Pressure Permissive Pressure Switch                                |
| 05000373/2017001-00                        | LER | Reactor Core Isolation Cooling System Inoperable Longer Than Allowed by the Technical Specifications Due to Low Suction Pressure Trips   |
| 05000373/2017002-00<br>05000374/2017002-00 | LER | Secondary Containment Inoperable Due to Interlock Doors Open   |
| 05000374/2017001-00                        | LER | Manual Reactor Scram Due to Turbine-Generator Run-Back Caused by Stem-Disc Separation in Stator Water Cooling Heat Exchanger Inlet Valve |
| 05000374/2017002-02                        | FIN | Failure to Implement a Preventive Maintenance Strategy for Main Generator Auxiliaries  |

### Discussed

- |                     |     |  |
|---------------------|-----|--|
| 05000373/2016004-03 | NCV | Failure to Perform Preventive Maintenance Resulting in Two Subsequent Unit 1 RCIC [Reactor Core Isolation Cooling] Turbine Trips During Surveillance Testing |
| 05000373/2017001-02 | NCV | Failure to Perform Preventive Maintenance Resulted in Stem-to-Disc Separation of Safety-Related Valve  |

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R01 Adverse Weather Protection

- LAP-100-44; Inclement Weather Guidance; Revision 3
- LOA-TORN-001; High Winds/Tornado; Revision 20
- OP-AA-108-107-1002; Interface Procedure Between BGE/Comed/Peco and Exelon Generation (Nuclear Power) For Transmission Operations; Revision 10
- OP-AA-108-111-1001; Severe Weather and Natural Disaster Guidelines; Revision 15
- WC-AA-107; Seasonal Readiness; Revision 17
- WC-AA-8000; Interface Procedure Between BGE/Comed/PECO and Exelon Generation (Nuclear Power) For Construction and Maintenance Activities; Revision 9

### 1R04 Equipment Alignment

- AR 4006673; NRC Identified: Housekeeping Issues
- AR 4023360; NRC Question on RCIC Walkdown
- Figure 11-10; Non-HPCS Engine Air Starting System; 11/14/2000
- Figure 11-6; Diesel Generator Jacket Water Cooling System; 11/14/2000
- LAP-820-2T; Editorial Change Criteria; Revision 36
- LOP-DG-03E; Unit 0 Diesel Generator Electrical Checklist; 4/13/2017
- LOP-DG-03M; Unit 0 Diesel Generator Mechanical Checklist; Revision 8
- LOP-LV-01M; Unit 1 Locked Valve Position Checklist; Revision 22
- LOP-RI-01E; Unit 1 Reactor Core Isolation Cooling System Electrical Checklist; Revision 12
- LOP-RI-01M; Unit 1 Reactor Core Isolation Cooling System Mechanical Checklist; Revision 20
- LOP-RI-02E; Unit 2 Reactor Core Isolation Cooling System Electrical Checklist; Revision 16
- LOP-RI-02M; Unit 2 Reactor Core Isolation Cooling System Mechanical Checklist; Revision 21
- M-147; P&ID Reactor Core Isolation Coolant System (RCIC); Revisions BL, AP, AS, BH
- WO 1717905; U1 Verify Outage Portion of Locked Valves per LOP-LV-01M; 3/08/2016

### 1R05 Fire Protection

- AR 4023389; NRC Identified: 1LL106E ELBP De-Energized
- Calc L-000776; Summary of Combustible Loading; Revision 8
- FZ 2I4; LaSalle County Generating Station Pre-Fire Plan; RX BLDG, 673'-4" Elev. U1 LPCS/RCIC Pump Cubicle; Revision 2
- FZ 4D2; Aux. Bldg. 749'0" Elev. U2 Cable Spreading Room; Revision 1
- FZ 7B3; DG Bldg. 710'0" Elev. U1 Division 1 Standby Diesel Generator Room; Revision 2
- FZ 7C5; LaSalle County Generating Station Pre-Fire Plan; DG. BLDG. 674'0" Elev. U1 Division 2 RHR Service Water Pump Room
- FZ-3I4; LaSalle County Generating Station Pre-Fire Plan, RX Bldg. 673'4" Elev. U2 LPCS/RCIC Pump Cubicle; Revision 1
- LSCS-FPR H.3; Design-Basis Fire, Unit 1 RCIC/LPCS Cubicle—Elevation 694' 6" Fire Zone 2H4; Revision 7

- LSCS-FPR, H.3-2; Combustible Loading and Extinguishing Capability; Revision 7
- LSCS-FPR, H.3-24; Unit 1 RHR Heat Exchanger A Cubicle — Fire Zone 2H5; Revision 6

#### 1R06 Flood Protection Measures

- LOA-FLD-001; Flooding; Revision 20
- LSCS-UFSAR 3.4; Water Level (Flood) Design; Revision 20
- M-134; CSCS Equipment Cooling Water System Critical Control Room Drawing, Sheet 1, Revision AY

#### 1R11 Licensed Operator Requalification Program

- LGP-1-1; Normal Unit Startup; Revision 120
- LGP-2-1; Normal Unit Shutdown; Revision 112
- L2C17-02; Reactivity Maneuver Plan; Revision 1
- L2M22; LaSalle Unit 2 Shutdown, Gross MWe Graph; 6/06/2017
- U2, Cycle 17, Sequence SC11-05; Rod Operability Testing, Control Rod Sequence Review and Approval Sheet; 6/02/2017

#### 1R12 Maintenance Effectiveness

- (a)(1) Action Plan; 03/16/2017
- AR 2517600; RCIC Barometric Condensate Pump Did Not Shut Off on Low Level
- AR 2560838; 1E51-F086 Showed Dual When Closing
- AR 2585625; Number of Assumed Cycles in Calc 037813 (CMED) Underestimated
- AR 2655443; NRC-CDBI Identified Issue
- AR 2729622; Parts Not Like for Like
- AR 2742254; U1 RCIC Trip on Low Suction Pressure
- AR 3949431; RCIC Exceeded Maintenance Rule Reliability Criteria
- AR 3953651; RCIC CCF After Failure Analysis
- AR 4029592; NRC Questions Regarding RCIC System Safety-Related
- ER-AA-310; Implementation of the Maintenance Rule; Revision 10
- ER-AA-310-1004; Maintenance Rule – Performance Monitoring; Revision 13
- PMRC-17-002260; Replace RCIC EG-R and Clean/Flush RCIC EG-R Oil Reservoir
- WC-AA-101; Online Work Control Process; Revision 26

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

- 1923082-01; Risk Screening/Mitigation Plan, Chemical Cleaning 2VY02A Cooler; 5/30/2016
- AR 1048290; (TRNG) TSTF 423 Implementation Enhancements Identified in Training
- ER-AA-600-1011; Risk Management Administrative Guidance; Revision 16
- ER-AA-600-1043; Shutdown Risk Management; Revision 7
- L2M19; Shutdown Safety Approval; 6/06/2017
- LCOTR 01-17-01-1E21-F011; Active Degraded Equipment List; 5/17/2017
- OP-LA-101-111-1002; Equipment Availability Briefing Sheet; LPCS Used as Injection Source; Revision 69
- OU-LA-104; Shutdown Safety Management Program; Revision 20
- Protected Equipment Log, Pathway Checklist; 5/17/2017
- Protected Pathway List; 5/02/2017
- WO 1346020-01; TIMM100 — Work Task Outline, Replace LPCS Min Flow Valve Press Switch; 9/25/2011

## 1R15 Operability Evaluations

- AR 2625153; 2FP10J Refuel Floor Fire Panel Fault
- AR 2639919; Maintenance Rule (a)(1) Determination for LAS-1-AP-02
- AR 2659485; NRC Identified CDBI – Calculation Issue; 4/22/2016
- AR 2666859; Fire Detection Alarm—Refuel Floor
- AR 2668855; CDBI 2016 NRC Observation on Use of Measured LRC for 1EBOP
- AR 2669645; Refuel Floor Panel 2FP10J Trouble Alarm
- AR 2670601; Refuel Floor Panel 2FP10J Trouble Alarm
- AR 2680801; 2FP10J Refuel Flr Fire Alarm
- AR 2721102; Refuel Floor Fire Detection Inoperable
- AR 2721326; Refuel Floor FP Alarm
- AR 2722909; Refuel Floor Fire Detection Panel Trouble Alarm
- AR 2723126; Spurious Refuel Floor Panel 2FP10J Trouble Alarm/LOA Entry
- AR 2724737; 2XY-FP2606 Refuel Floor Fire Alarms
- AR 2725264; Refuel Floor Fire Detection Panel 2FP10J Trouble Alarm
- AR 2725644; Refuel Floor Trouble Alarm Code 62
- AR 2742819; U2 Refuel Floor Fire Detection Trouble
- AR 3948861; 2FP10J Trouble Alarm. (Refuel Floor 115)
- AR 3949662; Refuel Floor Trouble Fire Alarm
- AR 3980475; ACB 522 Failed to Close
- AR 3981033; 2B DG Output Breaker Failed to Close
- AR 3983589; ACB 2411 Failed to Close
- AR 3984070; Refuel Floor 2FP10J Trouble Alarm
- AR 3984077; Refuel Floor 2FP10J Trouble Alarm
- AR 3984375; Unexpected Refuel Floor Fire Trouble Alarm – 2FP103
- AR 3985893; (A)(1) Determination for MR Function LAS-1-01
- AR 3988128; Refuel Floor Fire Protection Trouble and Det Actuated Alarm
- AR 3994105; Unexpected Refuel Floor Fire Alarm
- AR 3995312; Unexpected Refuel Floor Fire Alarm
- AR 4010061; Four DPM Leak from 1VY03A Area Cooler Header
- AT 2668855-02; CDBI 2016 NRC Observation on Use of Measured LRC for 1EBOP
- ER-AA-310; Implementation of the Maintenance Rule; Revision 10
- ER-AA-310-1006; Maintenance Rule—Dispositioning Between (a)(1) and (a)(2); Revision 7
- eSOMS Report: Degraded Equipment List, Unit 00, LCOTR # 00-VC-16-12-VC-ENVELOP; 4/28/2017
- Exelon Response to NRC Resident Questions on Maintenance Rule Function LAS-1-02; 3/04/2017
- L-003448; LaSalle Units 1 and 2, 250VDC System Analysis; 6/28/2016
- LES-DC-104; Inspection of DC Motors and Brushes; Revision 15
- LOS-TO-R1; U-1(2) Emergency Bearing Oil Pump Performance Test; Revision 0
- M-95; P&ID High Pressure Core Spray (HPCS); Revision AQ
- MR Determination Issue Report 2639919; Maintenance Rule SSC: LAS-1-AP-02: Provide 4.16 Kv [kilovolt] Power to the ESS 141Y, 142Y, 143 and Non-ESS 141ESS 141X, 142X Switchgear and Loads; 6/09/2016
- MR Function Evaluation LAS-1-AP-02; Maintenance Rule Unit 1; 3/15/2017
- MR AR 2626048; Maintenance Rule Failure Classification Form, LAS-1-AP; 4/11/2016
- MR AR 2631221; Maintenance Rule Failure Classification Form, LAS-1-AP; 4/24/2016
- MR AR 2632017; Maintenance Rule Failure Classification Form, LAS-1-AP; 4/22/2016
- MR LAS-1-AP Maintenance Rule System Basis Document; Auxiliary Power 480V & Above; 3/30/2017

- MR LAS-1-AP; Maintenance Rule Function Evaluation Supply 6.9 KV Power, Non-Essential Switchgear 151 and 152; 3/16/2017
- MR LAS-1-AP; Maintenance Rule Function Evaluation; 3/15/2017
- MR LAS-1-AP; Maintenance Rule System Basis Document, Auxiliary Power 480V & Above; 3/20/2017
- MR LAS-1-AP; Maintenance Rule System Basis Document, Non-Essential Switchgear 151 and 152; 3/30/2017
- MR LAS-1-AP-04; Maintenance Rule Function Evaluation, 480 Volt SR ESS MCC Loads; 3/15/2017
- MR LAS-1-AP-05; Maintenance Rule System Basis Document, Overcurrent Protection Devices for Primary Containment Penetrations; 3/30/2017
- MR LAS-1-AP-10; Maintenance Rule System Basis Document, 120 V Source of Power to Safety-Related Loads and Instrumentation; 3/30/2017
- MR; Maintenance Rule Current (a)(1) Systems, Systems at the Functional Failure Limit, Rolling 12 Months MR Functional Failures; 3/02/2017
- NRC CDBI Inspection Request 515; Calculation L-003448 Question About 1EBOP; 5/05/2016
- OP-AA-102-103; Operator Work-Around Program, CM-1; Revision 4
- Photo; GE Motor Model SC0204TD804A302 Tag; Undated
- WO 1727336-01; Inspection of DC Motor and Brushes; 3/07/2016
- WO 1921651-01; Perform Stem Lube on 1E22-F012 (Exelon Work Notes); Undated
- WO 1921651-01; Perform Stem Lube on 1E22-F012; 6/22/2017
- WO 704823-01; U-1 Emergency Bearing Oil Pump Performance Test; 3/13/2006
- WO 704823-02; U-1 Emergency Bearing Oil Pump Performance Test; 1/23/2006

#### 1R19 Post-Maintenance Testing

- AR 4006617; DG Cooling Water Throttle Valves Repositioned
- EC 398681; Template for MR-90 Development (WO 464377-01); Revision 0
- LIP-GM-946; Installation Procedure for S-O-R Series 102/131/103/141 Environmentally Qualified Differential Pressure Switches; Revision 15
- LIS-LP-102; Unit 1 LPCS Minimum Flow Bypass Calibration; Revision 24
- MA-AA-716-100-F-01, WO 4640430-01; Maintenance Alterations Log; 5/17/2017
- WO 1812739-01; LOS-DG-SR7, Att. G, 2VY02A DP Test; 5/04/2017
- WO 1836644-01; DIV III DG Flow Test IAW LOS-DG-SR7. Att. E; 5/02/2017
- WO 1959051-01; WO# 1242987 Identified Material Degradation on 1E12-F332C; 5/11/2017
- WO 4627466-03; Work Request for Gate Valve 1E22-F004—Part 21; 6/26/2017
- WO 4627466-09; EP VT-3of Valve Internals During Overhaul of 1E22-F004 VLV; 6/24/2017
- WO 4627466-11; EP VT-1 of All Existing and Any New Bolting Material; 6/24/2017
- WO 4627466-12; EP As Left LLRT 1E22-F004; LTS-900-3; 6/28/2017
- WO 4627466-13; OPS PMT: Cycle 1E22-F004 Per LOS-HP-Q3; 6/26/2017
- WO 4627466-14; Risk Screening/Mitigation Plan —Perform As-Found, As-Left Stem Rotation Check on the 1E22-F004 Valve; 5/08/2017
- WO 4627466-17; OP PMT: Verify No Leaks After Blind Flanges Installed; 6/26/2017
- WO 4627466-26; Op Perform Leak Check After Valve Repairs; 6/28/2017
- WO 4640430-01; Unexpected Main Control Room Alarm; 5/17/2017
- WO 464377-01; Vent and Verify Calibration of Hydraulic Header Pressure #3 Transmitter; 6/05/2017

#### 1R20 Refueling and Other Outage Activities

- LGP-1-S1; Master Startup Checklist; Revision 82

- LGP-1-1; Normal Unit Startup; Revision 120
- LGP-2-1; Normal Unit Shutdown; Revision 112
- L1M22; Shutdown Safety Approval, Log 01; 6/22/2017
- SAR7.0; Control Rod Move Sheets (L1M22); 6/24/2017

#### 1R22 Surveillance Testing

- LOS-RH-Q1; Tech Spec Surveillance, Unit 1 1B RHR WS Biennial Comprehensive IST Pump Test; 4/04/2017
- WO 4620815-01; LRA LOS-DG-M3 2B DG Idle Start ATT 2B-Idle
- WO 1962780-01; RX VSL HI LVL 8 TURB/FW PMP Trip; 4/07/2017
- WO 4612253-01; LOS-RH-Q1 2A RHR System Att 2A; 5/19/2017

#### 1EP6 Drill Evaluation

- AR 02677672; 2Q16 LORT/EP PI Scenario Development and Control Issues
- AR 02679227; EP Trend in Drill Scenario Development Gaps
- AR 02695307; LaSalle EP NRC Graded Exercise – CR/SIM Lessons Learned
- AR 02704926; LAS-EP-2016-NRC-Station Proc
- AR 02709108; 2016 3RD Quarter Drill Objective Failure
- AR 02728275; EP – Drill Objective Failure – PI Drill-Team B
- EP-AA-120; Emergency Plan Administration; Revision 2
- EP-AA-122; Drill and Exercise Program; Revision 18
- EP-AA-122-100; Drill and Exercise Planning and Scheduling; Revision ?
- EP-AA-122-200; Drill and Exercise Execution; Revision 2
- EP-AA-122-300; Drill and Exercise Evaluation; Revision 22
- EP-AA-122-300-F-01; Drill and Exercise Evaluation Criteria; Revision H
- EP-AA-122-300-F-02; Drill and Exercise Objective Evaluation Summary; Revision D
- EP-AA-122-300-F-04; Drill and Exercise Post Event Critique and Report Development Guidance; Revision B
- LaSalle 2016 NRC Graded Exercise Evaluation Report, 7/20/16
- LaSalle 2016 Pre Exercise Evaluation Report, 6/15/16
- LaSalle 2Q16 LORT/PI Drills Evaluation Report, 9/16/16
- LaSalle 2Q17 LORT/PI Drill, 4/21/17
- LaSalle 3Q16 PI Drill Evaluation Report, 11/01/16
- LaSalle 4Q16 PI Drill Evaluation Report, 12/28/16

#### 2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

- AR 2431339; RP to Correct Radiological Shopping Calculations; 12/16/2014
- AR 2438550-04; NRC Inspection 71124.08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation; 8/19/2015
- AR 2527585; Radwaste Characterization Improvements; 7/14/2015
- AR 2708627; NRC Inspection 71124.08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation; 2/22/2017
- LOS-WX-Q3; Operating Department Surveillance; Radwaste High Radiation Surveillance; Revision 2
- Radiation Protection Technician Initial Training; Module RPTI 8.05; Radioactive Material Shipments; Revision 22

- Radiation Protection Technician Training; Performance Training and Evaluation; Task 509-004; Provide Radiological Protection Coverage During the Preparation of a Shipment Radioactive Material; Revision 3
- Radiation Protection Technician Training; Performance Training and Evaluation; Task 509-010; Survey RAM Transport Vehicle; Revision 4
- Radiation Protection Technician Training; Performance Training and Evaluation; Task 509-013; Receipt Survey of Radioactive Material; Revision 3
- Radioactive Waste Shipment Number LW16-15; Waste Sludge (Type B(U) Package); Dated 6/20/2016
- Radioactive Waste Shipment Number LW16-19; Dewatered Powdered Resin (Type B(U) Package); 9/07/2016
- Radioactive Waste Shipment Number LW16-50; ALPS Cation Resin (LSA-II); Dated 12/13/2016
- Radioactive Waste Shipment Number LW17-17; Dewatered ALPS Resin (LSA-II); Dated 3/02/2017
- RP-AA-600; Radioactive Material/Waste Shipments; Revision 16
- RP-AA-600-1011; Use and Operation of WMG Software for Gross Gamma Characterization and Generation of Shipping Paperwork; Revision 4
- RP-AA-605; 10 CFR 61 Program; Revision 7
- RP-AA-605; Attachment 2; Waste Stream: ALPS Anion; 9/07/2016
- RP-AA-605; Attachment 2; Waste Stream: ALPS Backwash; 9/23/2016
- RP-AA-605; Attachment 2; Waste Stream: ALPS Cation; 8/04/2016, 8/29/2016, and 9/24/2016
- RP-AA-605; Attachment 2; Waste Stream: DAW; 6/08/2015
- RP-AA-605; Attachment 2; Waste Stream: Primary Resin; 8/03/2015
- RP-AA-605; Attachment 2; Waste Stream: Secondary Resin; 9/18/2014
- RW-AA-100; Process Control Program for Radioactive Wastes; Revision 11
- RW-AA-102; Attachment 1; Radwaste Storage Facility/DAW Waste Container Integrity Inspection; 3/20/2017
- RW-AA-102; Radwaste Storage Facility/DAW Waste Container Inspections; Revision 5
- RW-AA-104; Attachment 1; Radwaste Storage Facility/Waste Container Integrity Inspection; 3/20/2017
- RW-AA-104; Radwaste Storage Facility/Waste Container Inspections; Revision 5

#### 4OA1 Performance Indicator Verification

- LS-AA-2100; Monthly Data Elements for NRC Reactor Coolant System (RCS) Leakage; August 2016, November 2016

#### 4OA2 Problem Identification and Resolution

- 1934155; 00091232-01, TSEQ, RHR B/C (LPCI Mode) Min Flow Bypass, W: L02-LIS-RH-203B
- 3975899; 1E12-N413B Failed Outside LCO
- 4602743-01; LMT-RX VSL Lo Pressure RHR B/RHR C (LPCI) INJ VLV PERM; 2/19/2017
- AR 2734006; Inst. OOT, 2E12-N010AA, Trend Code B2
- AR 3975599; Division 2 RHR Inj Permissive Pressure Cal.
- AR 3975899; 1E12-N413B Failed Outside LCO
- AR 3988394; Inst. OOT, 2E12-N010AA, Trend Code B2
- AR 3988848; Inst. OOT, 2E12-N010AA, Trend Code B2
- AR 3988848; Inst. OOT, 2E12-N010BA, Trend Code B2

- AR 4022431; Need WO to Replace LPCS Pressure Switch
- EC 348598, Design Change Summary—SOR Differential Pressure Switches to be Replaced as Required; Revision 003
- EC 391279; Replace SOR DP Switches 1(2)E31–N007AA,BA and 1(2)E31\_N013AA,BA; Revision 1
- ER–AA–200; Preventive Maintenance Program; Revision 3
- ER–AA–200–1001; Equipment Classification; Revision 3
- ER–AA–520; Instrument Performance Trending; Revision 4
- Operator Logs, 2/18/2017
- PS N413B; Equipment Additional Details, Equipment Doc Package 1, System E12; Undated
- Unit 1 Rolling Schedule; 6/17/2017
- WO 1598803–01; Data Table 8 per LIS–RH–203B, 2E12–N010CA Trip Setpoint and Reset Point Data; 9/19/2016

Action Requests Generated from NRC or IEMA Inspection

- 3982661; NRC Identified: Closeout Inspection Of U2 DW 807, 796, 777
- 3987848; NRC Feedback From Temporary Inspection 2515/192
- 3990585; NRC Identified Preferred “As Left” Switch Position Not Correct
- 3991549; NRC Observation: ANS Design Report Needs Updating
- 3995406; NRC Identified Discrepancy In ROP Initiating Event Perf Indicators
- 3995629; NRC Identified: Sri Question On 2E22–F004
- 3996908; ODG Heat Exchanger Shell Side Momentarily Drained
- 3997971; NRC SRI Question ,Operability Determination 10 CFR Part 21
- 4002381; Non-Conforming Condition Associated With Anchor-Darling DDGV
- 4002465; NRC Identified A Potential Enhancement Opportunity 2E22–F004
- 4003111; NRC Identified: Correction To Revision 2 Of TP17–1–112
- 4003319; NRC Question On Weak Link Analysis Calc For 1E22–F004
- 4004367; NRC: Scaffold Built Close To Safety-related Equipment
- 4006673; NRC Identified: Housekeeping Issues
- 4006673; NRC Identified: Housekeeping Issues
- 4006785; IEMA Identified Issues
- 4008163; IEMA Identified: HCU 42–03 RCMS Flex Conduit Connection
- 4008167; IEMA Identified: HCU 30–35 RCMS Flex Conduit Connection
- 4009694; NRC Question On 1E22–F004 2012 Diagnostic Assessment Input
- 4009733; NRC Identified: Radwaste Shipping Enhancements
- 4011101; IEMA Identified: TLO Vapor Extractor Vacuum
- 4011102; Past Torque Switch Settings for Anchor Darling Gate Valves
- 4014301; NRC Identified: Passport Incorrectly Shows Equipment Records As EQ
- 4015297; IEMA Identified: Water Near RCIC Drain Pot
- 4016956; NRC Identified: Questions On Revision 2 Of OE 17–002
- 4018656; NRC Identified—U1 WS Line Shaking
- 4022543; NRC Inspector Inadvertently Ran DLR Through X-Ray Machine
- 4023360; NRC Question On RCIC Walkdown
- 4023389; NRC Identified: 1LL106E–ELBP De-Energized
- 4023620; NRC Question On Mechanical Checklist LOP–RI–01M

40A3 Event Follow-Up

- 1E–1–4221AD; M.O. Valve Limit Switch Diagrams; Undated
- AR 1291276–02; 1E31–N007BA SOR Differential Pressure Switch Failure; 7/15/2017

- AR 14011747-02; To Document PINV; 5/19/2017
- AR 3965520; Unit 2 Manually Scrammed Due to a GC Runback
- AR 3981145; Initiate Root Cause Investigation for GC Event
- AR 3990980; NER NC-17-010-Y LAS Stator Water Valve Stem to Disc Failure
- ER-AA-200; Preventive Maintenance Program; Revision 2
- ER-AA-200-1001; Equipment Classification; Revision 2
- ER-AA-2004; System Vulnerability Identification and Mitigation; Revision 9
- AR 3981145; Root Cause Investigation Unit 2 Manually Scrammed Due to a Generator Runback; 1/23/2017
- LER 2017-001-00; Reactor Core Isolation Cooling System Inoperable Longer than Allowed by the Technical Specifications Due to Lower Suction Pressure Trips; 2/08/2017
- LER 2017-002-00; Secondary Containment Inoperable Due to Interlock Doors Open; 3/17/2017
- MA-AA-716-210-1001; Performance Centered Maintenance (PCM Templates)

## LIST OF ACRONYMS USED

AC	Alternating Current
AR	Action Request (Issue Report)
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
DC	Direct Current
DG	Diesel Generator
EG-R	Electronic Governor-Remote
GC	Stator Winding Cooling System
HPCS	High Pressure Core Spray
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IST	Inservice Testing
LCO	Limiting Condition of Operation
LER	Licensee Event Report
LPCS	Low Pressure Core Spray
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
PI	Performance Indicator
PCM	Performance Centered Maintenance
PM	Preventive Maintenance
PMT	Post-Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RP	Radiation Protection
SOR	Static-O-Ring
SSC	Structure, System, and Component
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
WO	Work Order