



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

December 13, 2018

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

**SUBJECT: LIMERICK GENERATING STATION – BIENNIAL PROBLEM IDENTIFICATION
AND RESOLUTION INSPECTION REPORT 05000352/2018011 AND
05000353/2018011**

Dear Mr. Hanson:

On November 2, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Limerick Generating Station (Limerick), Units 1 and 2. The inspectors discussed the results of this inspection with Mr. Martin Bonifanti, Operations Director, and other members of your staff. The results of this inspection are documented in the enclosed report.

The inspectors reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the inspectors determined that your staff's performance in each of these areas supported nuclear safety.

The inspectors also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the inspectors determined that your staff's performance in each of these areas supported nuclear safety.

Finally, the inspectors reviewed the station's programs to establish and maintain a safety conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the inspectors' observations and the results of these interviews, the inspectors found no evidence of challenges to your organization's safety conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

The inspectors documented one finding of very low safety significance (Green) in this report. This finding involved violations of NRC requirements and is being treated as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the violation or significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Limerick.

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 the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Jonathan E. Greives, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos. 50-352 and 50-353
License Nos. NPF-39 and NPF-85

Enclosure:
Inspection Report 05000352/2018011 and
05000353/2018011

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SUBJECT: LIMERICK GENERATING STATION – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000352/2018011 AND 05000353/2018011 DATED DECEMBER 13, 2018

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

Docket Numbers: 50-352 and 50-353

License Numbers: NPF-39 and NPF-85

Report Numbers: 05000352/2018011 and 05000353/2018011

Enterprise Identifier: I-2018-011-0032

Licensee: Exelon Generation Company, LLC (Exelon)

Facility: Limerick Generating Station (Limerick), Units 1 and 2

Location: Sanatoga, PA 19464

Dates: October 15, 2018 to October 19, 2018 and
October 29, 2018 to November 2, 2018

Inspectors: S. Barber, Senior Project Engineer, Inspection Leader
A. Rosebrook, Senior Project Engineer
M. Fannon, Resident Inspector
M. Henrion, Project Engineer

Approved By: Jonathan E. Greives, Chief
Reactor Projects Branch 4
Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Exelon's performance at Limerick by conducting the biennial problem identification and resolution inspection in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

Based on the samples selected for review, the inspectors concluded that Exelon was effective in identifying, evaluating, and resolving problems and that Exelon effectively used operating experience and self-assessments. The inspectors found no evidence of significant challenges to Exelon's safety conscious work environment and concluded that the staff are willing to raise nuclear safety concerns through at least one of the several means available.

NRC-identified and self-revealing findings are summarized in the table below.

List of Findings and Violations

High Pressure Coolant Injection Pump Mechanical Seal Leak			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000352/2018-011-01	[H.8] Procedure Adherence	71153
A self-revealing Green non-cited violation (NCV) of Limerick Technical Specification Limiting Condition for Operation (TS LCO) 3.0.4 was identified when Exelon did not correctly implement work instructions for maintenance on the high pressure coolant injection (HPCI) system. This resulted in a violation of TS LCO 3.0.4 due to HPCI being inoperable during a mode change to Mode 1 on April 17, 2018, due to a mechanical seal leak.			

Additional Tracking Items

Type	Issue number	Title	Inspection Results Section	Status
LER	05000352/2018-003-00	HPCI Inoperability due to Main Pump Inboard Seal Leak	71153	Closed
LER	05000353/2017-004-01	Degraded Condition due to Reactor Pressure Vessel (RPV) Instrument Nozzle Leakage	71153	Closed
LER	05000353/2017-007-00	Reactor Mode Switch Change During RCIC Testing	71153	Closed

INSPECTION SCOPES

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

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Inspectors Inspection (1 Sample)

The inspectors performed a biennial assessment of Exelon's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment. The assessment is documented below.

- (1) Corrective Action Program Effectiveness – The inspectors evaluated Exelon's effectiveness in identification, prioritization, evaluation, and correcting problems, and verified the station complied with NRC regulations and Exelon's standards for corrective action programs.
- (2) Operating Experience – The inspectors evaluated Exelon's effectiveness in its use of industry and NRC operating experience information and verified the station complied with Exelon's standards for the use of operating experience.
- (3) Self-Assessments and Audits – The inspectors evaluated the effectiveness of Exelon's audits and self-assessments and verified the station complied with Exelon's standards for the use of audits and self-assessments.
- (4) Safety Conscious Work Environment – The inspectors reviewed Exelon's programs to establish and maintain a safety conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs.

71153 - Follow-up of Events and Notices of Enforcement Discretion

Licensee Event Reports (3 Samples)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000352/2018-003-00, HPCI Inoperability due to Main Pump Inboard Seal Leak (ADAMS Accession No. ML18169A237)

The circumstances surrounding this LER are documented in the Inspection Results section of this report. This LER is closed.

- (2) LER 05000352/2017-004-01, Degraded Condition due to RPV Instrument Nozzle Leakage (ADAMS Accession No. ML18221A256)

The inspectors reviewed the updated LER submittal. The previous LER submittal was reviewed in Inspection Report 05000352 & 05000353/2017-004 (ADAMS Accession No. ML18032A569). This LER is closed.

- (3) LER 05000353/2017-007-00, Reactor Mode Switch Change during RCIC Testing (ADAMS Accession No. ML17332A077)

The circumstances surrounding this LER were documented in Inspection Report 05000352 and 05000353/2017-003 (ADAMS Accession No. ML17306A027). This LER is closed.

INSPECTION RESULTS

Evaluation of the Limerick Problem Identification and Resolution Program	71152B
<p>The inspectors reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the inspectors determined Exelon's performance in each of these areas supported nuclear safety.</p>	
<p>The inspectors also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the inspectors determined that Exelon's performance in each of these areas supported nuclear safety.</p>	
<p>Finally, the inspectors reviewed the station's programs to establish and maintain a safety conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the inspectors' observations and the results of these interviews, the inspectors found no evidence of challenges to the organization's safety conscious work environment. A cross section of Exelon employees were interviewed, and all stated a willingness to raise nuclear safety concerns through at least one of the several means available.</p>	

High Pressure Coolant Injection (HPCI) Pump Mechanical Seal Leak			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000352/2018-011-01	[H.7] Documentation	71152B
<p>A self-revealing Green NCV of Limerick TS LCO 3.0.4 was identified because Exelon staff failed to adequately implement work instructions for HPCI system maintenance. This resulted in a violation of TS LCO 3.0.4 due to HPCI being inoperable during a mode change to Mode 1 on April 17, 2018, due to a mechanical seal leak.</p>			
<p><u>Description:</u> The HPCI system is a single train high pressure injection system that is required by TS 3.5.1 to be operable in Modes 1, 2, and 3 when steam dome pressure is greater than 200 psig. LCO 3.0.4 states when an LCO is not met, entry into an operational condition shall</p>			

only be made if the associated action requirements permit continued operation in the operational condition for an unlimited period of time.

On March 26, 2018, Unit 1 was shutdown for a refuel outage. During the refuel outage, work was performed to repair a small leak on the HPCI main pump seal using procedure M-056-004, "Overhaul of the High Pressure Injection Main Pump," Revision 3. On April 15, 2018, Unit 1 entered Operational Condition (OPCON) 2, Startup. At 0510, on April 16, 2018, with reactor pressure at 200 psig, Unit 1 HPCI was declared operable following the HPCI operability verification surveillance testing when no seal leakage was evident. At 0804, on April 17, 2018, Unit 1 entered OPCON 1, Run. On April 17, 2018, with reactor pressure at 960 psig, the Unit 1 HPCI system was secured during surveillance testing due to a leak from the main pump inboard seal. The system was isolated and declared inoperable at 1030.

Troubleshooting identified that a retaining collar was not properly secured with its setscrew during reassembly of the Unit 1 HPCI main pump inboard seal. The retaining collar captures a split ring that secures the mechanical seal sleeve in position. During surveillance testing, the seal sleeve moved out of position resulting in the pump inboard seal leak. Based on the indeterminate condition of the seal, HPCI past operability between 200 psig and rated reactor pressure could not be assured. Although operators declared HPCI operable based on the 200 psig HPCI operability verification surveillance testing when no seal leakage was evident, the past operability evaluation could not justify operability at the time the reactor mode changed at 0804 on April 17, 2018, because reasonable assurance did not exist that the HPCI system could perform its safety function for its mission time. LER 05000352/2018-003-00 was submitted for a condition prohibited by TSs on June 18, 2018.

The inspectors reviewed Exelon's corrective action program evaluation (CAPE) for this issue and identified that Exelon failed to identify one potential cause for this event. The CAPE determined the cause was a lack of inspections/hold points to verify the work was completed. The CAPE also identified that technicians used procedure M-056-004 instead of the more detailed procedure M-056-001, "Replacement of the Mechanical Seals on the High Pressure Coolant Injection Main Pump- P204", Revision 0. The evaluation concluded that either procedure had sufficient detail to complete the work.

Inspectors identified that a procedure step to tighten the collar set screw is performed sequentially in M-056-001 (Step 5.10.3) vice at the end of the procedure in M-056-004 (Step 5.18.14) after additional components are installed such as the radial bearings, housings, and coupling hubs. The set screw was difficult to access as noted in the work order notes for the reassembly of the seal (using M-056-001), "...tighten set screw with allen socket and ratchet too deep and narrow to top of the set screw to stake." Inspectors determined that performing this step after additional interference was re-installed would make it more difficult to access the set screw, and because this was the step which was not performed correctly, the inspectors determined this was a contributing cause to the failure. The CAPE did not address this as a potential contributing cause. However, corrective actions were developed to address technician performance and to enhance the two procedures, including matching the sequence of the steps in the two procedures.

Corrective Actions: Exelon entering the event into their corrective action program as Action Request (AR) 04127674 and conducted an evaluation. The mechanical seal was reassembled and tested to restore HPCI system operability and subsequently, the mechanical seal was replaced. The evaluation concluded that technicians performed a less than adequate inspection and did not ensure that the split ring was secured by the retaining

collar. The individuals were coached and the procedure for a HPCI full pump rebuild was revised to include additional technical detail with technical hold points on pump seal reinstallation.

Corrective Action Reference: AR 04127674

Performance Assessment:

Performance Deficiency: Exelon technicians did not properly install the mechanical seal correctly in accordance with procedure M-056-004, step 5.18.14 resulting in the HPCI system being inoperable due to significant mechanical seal leakage.

Screening: The inspectors determined the performance deficiency was more than minor because it affected the Human Performance (pre-event) attribute of the Mitigating Events cornerstone and adversely affected the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Significance: The inspectors assessed the significance of the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power." Using IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the performance deficiency screened to a detailed risk assessment because HPCI is a single train system and the finding represented a loss of the high pressure injection safety function. Therefore, a detailed risk assessment was required. A senior reactor analyst conducted an event assessment using the Limerick Unit 1 SPAR model, Revision 8.50 dated February 28, 2017, and SAPHIRE, Version 8.1.8. The analyst conservatively set basic event HCI-TDP-FR-TRAIN (HPCI pump train fails to run given it started) to true to model the failure. The analyst assumed an exposure time of 39 hours which bounded the timeframe from when HPCI was declared operable in Mode 2 (steam dome pressure greater than 200 psig) until it was repaired and restored to an operable status in Mode 1. The core damage frequency was estimated to be 1.11 E-7/year with the dominant accident sequence being a loss of condenser heat sink with a failure to manually depressurize the reactor coolant system. The analyst also used IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004, to determine that since the total increase in large early release frequency of the finding was less than 1.0E-7/year . Therefore, the finding was determined to be of very low safety significance (Green).

Cross-Cutting Aspect: The inspectors determined that the finding had a cross-cutting aspect of Documentation within the cross-cutting area of Human Performance because Exelon did not create and maintain complete, accurate, and up-to-date documentation. Specifically, the M-056-004 maintenance procedure contained a step in sequence different than the more detailed M-056-001 procedure which contributed to the technicians failing to adequately secure the set screw in place. [H.7]

Enforcement:

Violation: Limerick TS 3.5.1 required HPCI to be operable in Mode 1, 2, and 3 when steam dome pressure is greater than 200 psig. LCO 3.0.4 states, in part, when an LCO is not met, entry into an operational condition shall only be made if the associated action requirements permit continued operation in the operational condition for an unlimited period of time.

Contrary to the above, on April 17, 2018, Limerick Unit 1 made an operation condition change from Mode 2 to Mode 1 with the HPCI system inoperable due to the mechanical seal leakage.

Disposition: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this violation closes LER 05000352/2018-003-00.

Observations	71152B
<p>Corrective Action Program: Based on the samples reviewed, the team determined that Exelon's performance in the area of condition report screening and evaluation adequately supported nuclear safety. However, the team identified an observation associated with the classification of issues, and resultant level of investigation completed. Specifically, the inspectors reviewed six issue reports (IRs) (2616867, 2646407, 2649924, 2650502, 4057128, and 4059470) that were classified within Exelon's corrective action program as a significance level of 2, and a likelihood or investigation class of D (2D). PI-AA-120, "Issue Identification and Screening Process," Revision 8, states that IRs with a significance level 2 should normally be assigned a likelihood of 'A', requiring a root cause analysis, or 'B', requiring a CAPE. A likelihood of 'D' requires no formal investigation to determine causes or corrective actions. The significance level versus likelihood table on page 2 of Attachment 3 to PI-AA-120 does not identify '2D' as a possible classification. However, a note in the procedure allows a lesser level of investigation be performed if there is confidence that the cause is understood and that corrective actions will adequately address the cause. An additional note states that "strong consideration should be given to perform a full root cause evaluation when the issue involves an LER." The inspectors noted that five of the six 2D IRs involved LERs, and none of these IRs received a full root cause evaluation.</p> <p>Inspectors determined that four of the IRs reviewed (2646407, 2649924, 4057128, and 4059470) likely should have required a higher level of evaluation because they were determined by Exelon staff to have nuclear safety and/or regulatory significance because they were reportable to the NRC and/or resulted in violations of regulatory requirements. Inspectors determined that the work group evaluations performed for the four IRs appeared to adequately address the specific issues.</p> <p>However, in another example, the use of the 2D classification could have resulted in a failure to identify and correct the cause of the failure. IR 4059470, which related to the improper operation of a core spray pump breaker, was downgraded from a 2B to a 2D because, at the time, the cause was believed to have been identified. However, the failed equipment was sent for an independent failure analysis and it was discovered that the previously identified cause was incorrect and the failure was due to a different failure mechanism. If this issue had originally been classified as a 2D, the equipment may not have been sent to Exelon Power Labs and the actual cause of a generic equipment issue that affects multiple safety-related systems would not have been identified. Exelon entered the observation into their corrective action program as IR 4191872.</p>	

Observations	71152B
<p>Corrective Action Program: The inspectors noted that several control rod drive mechanism (CRD) high temperature alarms were received (ARs 04183922 and 04183924) during the on-site inspection period. The inspectors also noted that the operability determinations for these ARs stated that operability of the CRD is not impacted until CRD temperature exceeds 350°F. Exelon procedure ARC-MCR-108 G5, "CRD Hydraulic Hi Temp," Revision 5, states that the alarm setpoint is 300°F and that once an alarm is acknowledged locally, the main control room annunciator can be cleared. The local alarm will self-clear if CRD temperature drops</p>	

below the setpoint; however, the inspectors noted that no additional alarm would be received to alert operators if CRD temperature continued to increase and the 350°F limit discussed in the operability determination was reached. The inspectors noted that no formal monitoring of the local CRD temperatures had been established by station procedures so the limit could be exceeded without the operators being aware. Exelon agreed with the observation and wrote AR 04184725, which documents their intent to establish a formal monitoring program to address this vulnerability. There was no evidence that CRD temperature had ever exceeded 350°F, so no violations of NRC requirements occurred.

Minor Violation/Performance Deficiency	71152B
<p>Corrective Action Program: The inspectors identified a minor violation of Title 10 of the <i>Code of Federal Regulations</i> Part 50, Appendix B, Criterion XVI, "Corrective Actions," for failure to correct a condition adverse to quality associated with the control room emergency fresh air supply (CREFAS) system on September 17, 2018. Specifically, On May 3, 2018, while obtaining current readings as part of a monthly operability test, an electrical spark was caused by a loose connection with the 'C' phase wire for the 'A' CREFAS heater breaker. The safety-related function of the CREFAS system is to provide a fresh air supply to operators in the control room to limit their doses under certain off normal and accident conditions. The loose wire required the system to be shut down before repairs could be effected. The system was subsequently repaired and returned to service.</p> <p>A similar event occurred on September 17, 2018, when obtaining amp readings as part of a similar monthly operability test. In this instance, movement of the phase wires for the 'B' CREFAS system resulted in a loose wire for the 'A' phase becoming partially detached. This condition also caused an electrical spark, and the system required repairs prior to being returned to service.</p> <p>The inspectors noted that the corrective action to identify the need to perform the amp readings and ensure no undue stress was placed on the cable while taking amp meter readings was originally assigned as part of a work group evaluation for the May 3, 2018, event. This corrective action had an original due date of July 18, 2018. Due to an extension of the due date, this action was not completed prior to the September 17, 2018, event. The inspectors noted that had the corrective actions to address the identified issues with the amp readings from the May 3, 2018, event been completed by the original due date, the identified deficiencies would have been resolved prior to the second event. However, the second event did not result in any additional unavailability of the CREFAS system because it was discovered during post-maintenance testing before returning the system to an operable status. Exelon entered this minor violation in their corrective action program and documented corrective actions to be taken. This violation is related to the assessment of the Corrective Action Program Area of Evaluation. (IR 4190614)</p> <p>Screening: The inspectors evaluated this finding using IMC 0612, Appendix B, "Issue Screening," and IMC 0612, Appendix E, "Examples of Minor Issues," and determined to be of minor significance.</p> <p>Enforcement: This failure to comply with Title 10 of the <i>Code of Federal Regulations</i> Part 50, Appendix B, Criterion XVI, "Corrective Actions," constituted a minor violation that was not subject to enforcement action in accordance with the NRC's Enforcement Policy.</p>	

EXIT MEETINGS AND DEBRIEFS

On November 2, 2018, the inspectors presented the biennial problem identification and resolution inspection results to Mr. Martin Bonifanti, Operations Director, and other members of the Limerick staff. The inspectors verified no proprietary information was retained or documented in this report.

DOCUMENTS REVIEWED**71152B**Procedures

ARC-MCR-108 G5, CRD Hydraulic Hi Temp, Revision 5
 EI-AA-1, Safety Conscious Work Environment, Revision 4
 EI-AA-101, Employee Concerns Program, Revision 11
 GP-2, Normal Plant Startup, Revision 172
 GP-7.1 Summer Weather Preparation and Operation, Revision 38
 M-056-001, Replacement of Mechanical Seals on the High Pressure Coolant Injection Main Pump- P204, Revision 0
 M-056-004, Overhaul of the High Pressure Coolant Injection Main Pump- P204, Revision 3
 OP-AA-108-107, Switchyard Control, Revision 4
 OP-AA-108-115, Operability Determinations, Revision 21
 OP-LG-108-108, Limerick Unit Start-up Review, Revision 6
 PI-AA-115, Operating Experience Program, Revision 4
 PI-AA-115-1002, Processing of Level 2 OPEX Evaluations, Revision 3
 PI-AA-115-1003, Processing of Level 3 OPEX Evaluations, Revision 4
 PI-AA-120, Issue Identification and Screening Process, Revision 8
 PI-AA-125, Corrective Action Program (CAP) Procedure, Revision 6
 PI-AA-125-1001, Root Cause Analysis Manual, Revision 3
 PI-AA-125-1003, Corrective Action Program Evaluation Manual, Revision 4
 PI-AA-125-1004, Effectiveness Review Manual, Revision 2
 PI-AA-125-1006, Investigation Techniques Manual, Revision 3
 PI-AA-126, Self-Assessment and Benchmark Program, Revision 2
 PI-AA-126-1001, Self-Assessments, Revision 2
 PI-AA-126-1005, Check-In Self-Assessments, Revision 1
 RP-AA-440, Respiratory Protection Program, Revision 14
 ST-6-001-766-1, Main Turbine Control Valve Exercise & RPS Channel Functional Test OPCON 4,5, Revision 21
 ST-6-049-231-2, RCIC Pump Comprehensive Test, Revision 10
 ST-6-055-230-1, HPCI Pump Valve and Flow Test, Revision 86
 ST-6-055-230-1, HPCI Pump, Valve, and Flow Test, Revision 8
 ST-6-092-117-2, D23 Diesel Generator 4KV SFGD Loss of Power LSF/SAA and Outage Testing, Revision 32

Self-Assessments and Audits

2017 Respiratory Protection, dated 12/30/17
 Chemistry Laboratory and Radiochemistry Quality Control, dated 6/30/18
 Clearance and Tagging, dated 12/31/16
 Foreign Material Exclusion Program, dated 6/28/17
 NOSA-LIM-17-06, Radiation Protection Audit Report, dated 6/23/17
 NOSA-LIM-17-08, Operational Functional Area Audit Report, dated 9/29/17
 NOSA-LIM-18-01, Maintenance Audit Report, dated 1/5/18
 NOSA-LIM-18-02, Limerick Security Program Audit Report, dated 3/5/18
 Preparation for NRC Problem Identification and Resolution (PI&R) Inspection, dated 8/17/18
 Protective Strategies and Target Sets, dated 5/5/17
 RP Instrumentation, 8/31/16
 Self-Assessment of LGS TRIP/SAMP/TSG Calculations, dated 12/31/17

Issue Reports (*initiated in response to inspection)

1324565	2719782	4037257
1452639	2720374	4039383
1582965	2721394	4048498
1609015	2725075	4054731
1613669	2728448	4057128
1616001	2732502	4057128
1624716	2733806	4058791
1633088	2740598	4059470
1636206	3944360	4059470
1639697	3944871	4062018
1648894	3948311	4065414
1658737	3948315	4070641
2398745	3950626	4070641
2399383	3955705	4076939
2399583	3955705	4081625
2433283	3961244	4082181
2433518	3961520	4086249
2438305	3962443	4090550
2458005	3964388	4091215
2487560	3977484	4098308
2506655	3980203	4106513
2523031	3980217	4120011
2566038	3982673	4120220
2598308	3986305	4120372
2599618	3992482	4120583
2616867	4000798	4120674
2624187	4001165	4121051
2627438	4001783	4124015
2632763	4002553	4124081
2644005	4003917	4126850
2644384	4004689	4127674
2650502	4006988	4127674
2676712	4021230	4129396
2686844	4022757	4133876
2691557	4030779	4138771
2696498	4032905	4141330
2705510	4034439	4141374
2706634	4036417	4143759
4144700	4157159	4181413
4145616	4161489	4183684
4149424	4164516	4183687
4155315	4164554	4183922
4155343	4172165	4183924
4155535	4173171	4184725*
4155869	4174218	4183787*
4155874	4174996	4184952*
4156255	4175151	4190614*
4156264	4179928	4191872*
4156632	4181107	
4156931	4181197	

Work Orders

4632990

Drawings

8031-M-12 Sheet1 Residual Heat Removal Service Water (RHRSW) Common, Revision 92
 8031-M-12 Sheet 2 RHRSW Unit 1, Revision 7
 8031-M-11 Sheet 1 Emergency Service Water (ESW) Common, Revisions 87 and 88
 8031-M-11 Sheet 2 ESW Unit 1 Revision 93
 8031-M-11 Sheet 3 ESW Unit 2 Revision 58
 8031-M-41 Nuclear Boiler Revision 31
 8031-M-47 Control Rod Drive Hydraulic Unit 1, Revision 24
 8031-M-52 Core Spray Unit 1, Revision 51
 8031-M-55 Sheet 1, High Pressure Coolant Injection Unit 1 Revision 58
 8031-M-55 Sheet 2, High Pressure Coolant Injection Unit 2 Revision 57

Non-Cited Violations (NCV) and Findings (FIN)

05000352/2016004-01, Failure to Demonstrate Effective Preventive Maintenance Under 50.65(a)(2) for the Instrument Air System
 05000352, 05000353/2016004-02, Control Structure Chiller Unit Trip Caused by Failure to Properly Implement Procedures
 05000353/2017001-01, Inadequate Work Instructions for Staging of Equipment and Routing of Temporary Power Cables
 05000352/2017001-02, Failure to Implement Human Performance Tools Results in Draining of Emergency Diesel Generator Jacket Water System
 05000353/2017002-01, Inadequate Design Control of the Drywell Unit Cooler Condensate Flow Rate Monitoring System
 05000353/2017003-01, Operational Condition Mode Change from Startup to Run was made with RCIC Inoperable
 05000353/2017004-01, Unplanned HPCI Inoperability Due to Isolating All Suction Sources During Post-Maintenance Testing
 05000352, 05000353/2017007-01 Failure to Document Technical Basis for Service Temperature Changes for Limitorque Motor Operated Valve Limit Switches
 05000353/2018001-01, Failure of Emergency Diesel Generator Pipe Nipple Fitting
 05000352/2018001-02 Emergency Diesel Generator Combustion Air Overheating
 05000352/2018002-01, Failure to Conduct Adequate Radiation Surveys and Evaluate Potential Radiological Hazards
 05000352/2018002-02 Unit 1 Core Spray Pump Failed to Start Resulting in Condition Prohibited by Technical Specifications

Miscellaneous

A1536161 Technical Evaluation of Pump Seal Leakage Peach Bottom dated 6/22/2006
 GE Service Information Letter (SIL) No 173, Control Rod Drive High Operating Temperature, May 28, 1976, Revision 0
 GE Service Information Letter (SIL) No 173, Control Rod Drive High Operating Temperature Supplement 1, September 21, 2007, Revision 1