



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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February 13, 2017

EA-16-245

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

SUBJECT: REISSUE—CLINTON POWER STATION—NRC INTEGRATED INSPECTION
REPORT 05000461/2016004, 05000461/2016501 AND 07201046/2016003

Dear Mr. Hanson:

On February 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) issued the subject Clinton Power Station—NRC Integrated Inspection Report (IR) 05000461/2016004, 05000461/2016501 and 07201046/2016003 (ADAMS Accession Number ML17041A302).

In the original report, Sections 1EP2, 1EP3, 1EP5, 4OA1.4, 4OA1.5 and 4OA1.6 were inadvertently omitted. We request that you replace the entire report with the enclosure to this letter.

In accordance with 10 CFR 2.390, of the NRC's "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records System (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Karla Stoedter, Chief
Branch 1
Division of Reactor Projects

Docket Nos. 50-461; 72-1046
License No. NPF-62

Enclosure:
IR 05000461/2016003; 05000461/2016501;
07201046/2016003
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-461; 72-1046
License No: NPF-62

Report Nos: 05000461/2016004; 05000461/2016501;
07201046/2016003

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station

Location: Clinton, IL

Dates: October 1 through December 31, 2016

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

Enclosure

TABLE OF CONTENTS

SUMMARY	2
REPORT DETAILS	4
Summary of Plant Status.....	4
1. REACTOR SAFETY	4
1R01 Adverse Weather Protection (71111.01)	4
1R04 Equipment Alignment (71111.04)	5
1R05 Fire Protection (71111.05)	5
1R06 Flooding (71111.06).....	6
1R11 Licensed Operator Requalification Program (71111.11)	7
1R12 Maintenance Effectiveness (71111.12)	8
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13).....	12
1R15 Operability Determinations and Functional Assessments (71111.15).....	12
1R19 Post-Maintenance Testing (71111.19).....	14
1R22 Surveillance Testing (71111.22).....	14
1EP2 Alert and Notification System Evaluation (71114.02).....	16
1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)	16
1EP4 Emergency Action Level and Emergency Plan Changes (71114.04).....	17
1EP5 Maintenance of Emergency Preparedness (71114.05)	17
4. OTHER ACTIVITIES	18
4OA1 Performance Indicator Verification (71151)	18
4OA2 Identification and Resolution of Problems (71152)	21
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153).....	22
4OA5 Other Activities.....	26
4OA6 Management Meetings	29
SUPPLEMENTAL INFORMATION	1
Key Points of Contact.....	1
List of Items Opened, Closed, and Discussed.....	2
List of Documents Reviewed	3
List of Acronyms Used	10

SUMMARY

Inspection Reports 05000461/2016004, 05000461/2016501 and 07201046/2016003; Clinton Power Station; Maintenance Effectiveness and Other Activities.

This report covers a 3-month period of inspection by resident inspectors, announced baseline inspections by regional inspectors and an inspection of operational activities of an Independent Spent Fuel Storage Installation (ISFSI) at the Clinton Power Station. One Green Non-Cited Violation (NCV) and one Severity Level IV Violation of the U.S. Nuclear Regulatory Commission (NRC) requirements were identified. 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 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," dated February 2014.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance and a non-cited violation of 10 CFR 50.65(a)(2), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the licensee's failure to demonstrate that the condition of flood seals was being effectively controlled through the performance of appropriate preventive maintenance such that the seals remained capable of performing their intended function. Specifically, the licensee failed to visually inspect more than 700 flood seals per procedure ER-AA-450, "Structures Monitoring," and procedure ER-CL-450-1007, "Clinton Surveillance Inspection Program for Seals." As corrective actions, the licensee visually inspected all accessible flood seals and evaluated the acceptability of the inaccessible seals. In addition, the licensee planned to modify ER-AA-450 to clarify the frequency of the flood seal inspection.

The inspectors determined the licensee's failure to demonstrate that the condition of flood seals was being effectively controlled through the performance of appropriate preventive maintenance was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected it could become a more significant safety concern. Specifically, the failure to monitor the condition of the flood seals could result in unrecognized flood seal degradation and result in seals being incapable of performing their intended function. The inspectors screened this finding against the Mitigating Systems cornerstone and concluded the finding was of very low safety significance because it did not involve the loss or degradation of equipment or a function specifically designed to mitigate a seismic, flooding or severe weather initiating event. This finding affected the cross-cutting area of Problem Identification and Resolution, in the aspect of identification, where the organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify the flood seals still had not been inspected when they performed the Maintenance Rule Program—Structures Monitoring Assessment which credited ER-CL-450-1007 in early 2014. (P.1) (Section 1R12)

Other Findings

- Severity Level IV: A self-revealed violation of 10 CFR 72.150, "Instructions, Procedures, and Drawings," was identified for the failure of the licensee to ensure that ISFSI procedures contained the appropriate level of detail for the circumstances such that important loading activities would be satisfactorily accomplished. Specifically, procedure HPP-2226-200, Revision 0, "MPC Loading at Clinton," was not adequate to ensure that the Multi-Purpose Canister (MPC) was correctly oriented in the transfer cask (HI-TRAC) and procedure HPP-2226-300, Revision 4, "MPC Sealing at Clinton," was not adequate to ensure that two thermocouples were appropriately installed during the hydrostatic test of the MPC. The licensee documented these issues in its corrective action program and took timely corrective actions.

The violation was determined to be of more than minor significance using IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues." Example 4e is applicable to this violation in that the MPC was incorrectly oriented in the transfer cask and then loaded with spent fuel in this incorrect configuration. Example 4b is also applicable to this violation in that unexpected leakage occurred during the hydrostatic test as a result of the failure to install the thermocouples. Cross-cutting aspects are not assigned to traditional enforcement violations. (Section 4OA5.1)

REPORT DETAILS

Summary of Plant Status

The unit operated at or near full power during the inspection period with the following exception:

- On December 11, 2016, power was reduced to approximately 75 percent to perform a control rod pattern adjustment and to perform control rod, main steam isolation valve, turbine stop valve/combined intermediate valve and turbine control valve testing. The unit was returned to full power on December 12, 2016.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Adverse Weather Condition—Heavy Rainfall/External Flooding Conditions

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the expected flooding conditions based on predicted rainfall and rises in local river and lake levels. The evaluation included a review to check for deviations from the descriptions provided in the Updated Safety Analysis Report (USAR) for features intended to mitigate the potential for flooding. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during the predicted flood conditions or allow water ingress past a barrier. The inspectors also walked down underground bunkers/manholes subject to flooding that contained multiple train or multiple function risk-significant cables. The inspectors also reviewed the abnormal operating procedure and compensatory measures for mitigating the expected flooding conditions to ensure they could be implemented as written. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in Inspection Procedure (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:

- reactor core isolation cooling (RCIC) following maintenance;
- residual heat removal train 'A' following maintenance;
- standby gas treatment (VG) train 'A' during maintenance on VG 'B'; and
- control room ventilation (VC) train 'B' during maintenance on VC 'A'.

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, USAR, Technical Specification (TS) requirements, outstanding work orders, condition reports, 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 corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted four partial system walkdown samples 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 A–3(g), Division 2 containment electrical penetrations—elevation 781';
- Fire Zone A–2(m), Containment electrical penetrations—elevation 762' east;
- Fire Zone A–3(o), Division 1 containment electrical penetrations—elevation 781';
- Fire Zone A–3(e), Containment electrical penetrations—elevation 762' west; and

- Fire Zone A–3(d), Auxiliary building non-safety related switchgear—elevation 762’.

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 USAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. 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 corrective action 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 area 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:

- high pressure core spray pump room.

Documents reviewed during this inspection 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 Requalification Program (71111.11)

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

a. Inspection Scope

On October 19, 2016, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification 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 December 11, 2016, the inspectors observed control room operators perform a down power to support a control rod pattern adjustment and other surveillance testing. 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.

.3 Biennial Written and Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Annual Operating Test, administered by the licensee from September 8, 2016 through September 30, 2016, required by 10 CFR 55.59(a). The results were compared to the thresholds established in Inspection Manual Chapter (IMC) 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training program to meet the requirements of 10 CFR 55.59. (02.02)

This inspection constituted one annual licensed operator requalification examination results 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:

- standby gas treatment system;
- remote shutdown system; and
- safety-related flood seals.

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 10 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 two quarterly maintenance effectiveness samples and one quality control sample as defined in IP 71111.12-05.

b. Findings

Failure to Demonstrate the Condition of Flood Seals was being Effectively Controlled

Introduction: The inspectors identified a finding of very low safety significance (Green) and a non-cited violation (NCV) of 10 CFR 50.65(a)(2), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the licensee's failure to demonstrate that the condition of flood seals was being effectively controlled through appropriate preventive maintenance such that the flood seals remained capable of performing their intended function. Specifically, the licensee failed to visually inspect more than 700 flood seals per ER-AA-450, "Structures Monitoring," and ER-CL-450-1007, "Clinton Surveillance Inspection Program for Seals."

Description: After performing a flood inspection walkdown of the "B" residual heat removal (RHR) system room, the inspectors selected nine penetration flood seals for additional review and requested the most recent flood seal inspection results from the licensee. The licensee informed the inspectors they did not have any inspection records for the specified seals. The absence of the flood seal inspection results concerned the inspectors as the material condition of the seals was unknown and the seals were relied upon to prevent water intrusion between plant areas if an internal flooding event occurred.

The inspectors reviewed additional documentation in an effort to determine the flood seals' material condition. The inspectors performed a search of corrective action items related to seals and found that the licensee initiated Action Request (AR) 01197979 in 2011 after finding that the flood penetration seals were not routinely inspected. The licensee inspected the flood seals installed to prevent external flood waters from

entering the plant. However, the same type of inspection was not performed on the internal flood seals. The licensee created an action item to generate a list of flood seals and developed procedure ER-CL-450-1007, "Clinton Surveillance Inspection Program for Flood Seals." This procedure included the inspection and documentation requirements for flood seals. Additionally, Section 2.10.1 stated, in part, "all flood seals located in the safety related (CAT 1) building shall be inspected once every five years." The inspectors noted that the action item to create the list of seals and the corresponding procedure was initially due on May 31, 2012. However, the procedure was not implemented until March 14, 2013, approximately two years after the issue was first identified.

The inspectors also reviewed the licensee's program to comply with 10 CFR 50.65 (commonly referred to as the Maintenance Rule). The inspectors found that the flood seals were included in the licensee's program and classified as an (a)(2) structure, system or component (SSC) under the structural monitoring function. For SSCs classified as (a)(2) under the Maintenance Rule, licensees are required to demonstrate the performance or condition of the SSC is being effectively controlled through appropriate preventive maintenance such that the SSC remained capable of performing its safety function. In addition, licensees are required to evaluate the SSC's performance, condition monitoring and preventive maintenance activities on a 24 month (or refueling cycle) frequency to ensure no adjustments need to be made.

Procedure ER-AA-450, "Structures Monitoring," Revision 5, provided guidance for implementing a structures condition monitoring program and required the licensee to visually examine the watertight seals and document and maintain the results once during each refueling cycle. The inspectors also reviewed a maintenance rule program structures monitoring assessment from 2014. This assessment credited the performance of procedures 9601.01 and ER-CL-450-1007 for monitoring water tight, fire rated and flood seals. The inspectors reviewed procedure 9601.01, Revision 28f, and found that this procedure pertained to the inspection of fire barriers/seals and was not specific to flood seals. Although procedure ER-CL-450-1007 was specific to flood seals, the inspection activities described in this procedure had not been completed. Based upon the lack of flood seal inspection results and the conflicting frequencies specified in procedures ER-AA-450 and ER-CL-450-1007, the inspectors determined that the flood seal visual examinations had not been completed since at least 2011. As a result, the licensee was unable to demonstrate compliance with 10 CFR 50.65.

The licensee entered this issue into their CAP as AR 02680762, "NRC Question Documentation on Flood Penetration Seal Inspect," and subsequently began visually inspecting all accessible flood seals. As of December 2016, the licensee inspected over 700 flood seals and found no unacceptable seal degradation. The licensee also evaluated the acceptability of a small number of flood seals that were inaccessible for inspection. Additionally, the licensee assigned a task in AR 02546443 to revise ER-AA-450 with a comment to provide clarification on the use of site specific procedures, such as ER-CL-450-1007 to determine flood seal inspection frequency.

Analysis: The failure to demonstrate that the condition of flood seals was being effectively controlled through appropriate preventive maintenance, such that the SSC remained capable of performing its safety function, was a performance deficiency.

This deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern and because the finding was associated with the equipment performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to monitor the condition of the flood seals in a manner sufficient to provide reasonable assurance they were capable of fulfilling the intended safety functions could adversely affect multiple mitigating systems in the event of a flood or line break.

Using IMC 0609, Attachment 4, "Initial Characterization of Findings," issued October 7, 2016, and Appendix A, "The Significance Determination Process for Findings at Power," issued June 19, 2012, the finding was screened against the Mitigating Systems cornerstone and determined to be of very low safety significance because the inspectors answered no to the question "does the finding involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event?"

The inspectors determined this finding affected the cross-cutting area of Problem Identification and Resolution, in the aspect of identification, where the organization implements a CAP with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee failed to identify the flood seals still had not been inspected when they performed the Maintenance Rule Program—Structures Monitoring Assessment which credited ER–CL–450–1007 in early 2014. [P.1]

Enforcement: Title 10 CFR 50.65(a)(1), requires, in part, that the holders of an operating license shall monitor the performance or condition of SSCs within the scope of the rule as defined by 10 CFR 50.65(b), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions.

Title 10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended functions.

Contrary to the above, since 2011, the licensee failed to demonstrate that the performance or condition of flood seals was being effectively controlled through the performance of preventive maintenance such that the SSC remained capable of performing its intended functions. Specifically, the licensee failed to perform preventive maintenance activities to visually inspect more than 700 flood seals and document the results. As corrective actions, the licensee visually inspected all accessible flood seals and generated an evaluation for any inaccessible seals. In addition, the licensee planned to modify ER–AA–450 to clarify the frequency of flood seal inspection.

Because the violation was of very low safety significance and was entered into the licensee's CAP as AR 02680762, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000461/2016004-01: Failure to Demonstrate the Condition of Flood Seals was being Effectively Controlled)**

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:

- yellow due to planned maintenance on RHR 'A';
- yellow due to planned maintenance on RCIC;
- yellow due to planned maintenance on standby liquid control 'B'; and
- yellow due to planned maintenance on VG 'B'.

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 four 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:

- AR 02650742: NRC Question on Control Room Envelope Operability Following a Loss of Control Room Positive Differential Pressure; and
- AR 02638307: 1SX027C Stroke Time Outside Limits.

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 USAR 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 corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted two samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

.2 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of operator workarounds (OWAs) on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the Attachment were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their CAP and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

This review constituted one operator workaround annual inspection sample as defined in IP 71111.15-02.

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 activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- testing the division 3 diesel generator fuel oil transfer pump;
- testing of VG damper actuator 0VG03YB; and
- testing of shutdown service water valve 1SX071B.

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 TSs, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various 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 corrective action 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 three post-maintenance testing samples as defined in IP 71111.19-05.

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:

- Clinton Power Station (CPS) 9015.01, “Standby Liquid Control System Operability” (routine test);
- CPS 9052.01, “Low Pressure Core Spray Comprehensive Pump Test” (inservice test); and
- CPS 9058.02, “RCIC/ECCS Water Leg Pump Comprehensive Testing” (inservice test).

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 USAR, 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 one routine surveillance testing sample and two in-service test samples as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors reviewed documents and conducted discussions with Emergency Preparedness (EP) staff and management regarding the operation, maintenance, and periodic testing of the primary and backup Alert and Notification System (ANS) in Clinton Station's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and the daily and monthly operability records from September 2014 through September 2016. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This ANS inspection constituted one sample as defined in Inspection Procedure (IP) 71114.02.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

.1 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed and discussed with plant EP management and staff the Emergency Plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on-shift staff as well as the provisions for maintaining the plant's ERO team and qualification lists. The inspectors reviewed reports and a sample of Corrective Action Program (CAP) records of unannounced off-hour augmentation drills and call-in tests, which were conducted from September 2014 through September 2016, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the training records of approximately fifteen ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This ERO augmentation testing inspection constituted one sample as defined in IP 71114.03. This inspection was performed by reviewing fewer documents than normal because inspection credit was given toward the biennial Emergency Response Organization Staffing and Augmentation System inspection for the performance of the Operational Safety Review Team inspection by the International Atomic Energy Agency in August 2014.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The regional inspectors performed an in-office review of the latest revisions to the Emergency Plan and Emergency Action Levels (EALs).

The licensee transmitted the Emergency Plan and EAL revisions to the NRC pursuant to the requirements of Title 10 of the *Code of Federal Regulations*, (10 CFR) Part 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a Safety Evaluation Report, and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

This EAL and Emergency Plan Changes inspection constituted one sample as defined in IP 71114.04.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

.1 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed a sample of nuclear oversight staff's audits of the EP Program to determine whether these independent assessments met the requirements of Title 10 of the *Code of Federal Regulations*, Part 50.54(t). The inspectors also reviewed critique reports and samples of CAP records associated with the 2015 Biennial Exercise, as well as various EP drills conducted in 2014, 2015, and 2016; in order to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify, track, and resolve issues identified during these activities. The inspectors reviewed a sample of EP items and corrective actions related to the licensee's EP Program and activities to determine whether corrective actions were completed, in accordance with the site's CAP. Documents reviewed are listed in the Attachment to this report.

This correction of EP weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05. This inspection was performed by reviewing fewer documents than normal because inspection credit was given toward the biennial Maintenance of Emergency Preparedness inspection for the performance of the Operational Safety Review Team inspection by the International Atomic Energy Agency in August 2014.

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 Mitigating Systems Performance Index—Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI)—Residual Heat Removal System (MS09) performance indicator (PI) for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC integrated inspection reports for the period of October 1, 2015 through September 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report 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 one MSPI residual heat removal system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index—Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI—Cooling Water Systems (MS10) PI for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC integrated inspection reports for the period of October 1, 2015 through September 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance.

The inspectors also reviewed the licensee's issue report 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 one MSPI cooling water system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System (RCS) Leakage PI for the CPS for the period from the fourth quarter of 2015 through the third quarter of 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI 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, issue reports, event reports and NRC integrated inspection reports for the period of October 1, 2015 through September 30, 2016 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified.

This inspection constituted one RCS leakage sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance Indicator (PI) for the period from the fourth quarter 2015 through the second quarter 2016. The PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's records and processes associated with the PI to verify the licensee accurately reported the Drill/Exercise PI in accordance with licensee procedures and NEI guidance. Specifically, the inspectors reviewed licensee records, processes, and procedural guidance for assessing opportunities, including control room simulator training sessions, the 2015 Biennial Exercise, and other drills during this period. The inspectors also reviewed the CAP to determine if problems had been identified and corrected. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one Drill/Exercise Performance sample as defined in IP 71151.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the fourth quarter 2015 through the second quarter 2016. The PI data reported during those periods and PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used to determine the accuracy. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and NEI guidance. Specifically, the inspectors reviewed licensee records and processes, including procedural guidance on assessing opportunities for the PI, performance during the 2015 Biennial Exercise, drills, and revisions of the roster of personnel assigned to key ERO positions. The inspectors also reviewed the CAP to determine if problems had been identified and corrected. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ERO drill participation sample as defined in IP 71151.

b. Findings

No findings were identified.

.6 Alert and Notification System Reliability

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the fourth quarter 2015 through the second quarter 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and NEI guidance. Specifically, the inspectors reviewed licensee records and processes for assessing opportunities for the PI and results of periodic ANS operability tests. The inspectors also reviewed the CAP to determine whether the problems had been identified and corrected. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ANS sample as defined in IP 71151.

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 corrective action program 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 were 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 Semi-Annual 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 corrective action program 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 July 1, 2016 through December 31, 2016, 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 semi-annual trend review inspection sample as defined in IP 71152.

b. Observations

Within the corrective action process, a trend had been identified regarding the licensee struggling to identify and subsequently enter conditions adverse to quality into the CAP. During the past six months, the inspector's monitored activities to evaluate the effectiveness of corrective actions put in place to address the trend.

Based on current observations, improvement has occurred in identifying and entering issues into the CAP. The licensee also performed a check in self-assessment of their CAP that concluded that the site was identifying and entering issues into the CAP at an appropriate threshold.

When items are entered into the CAP, the licensee tends to choose the lowest classification level/evaluation method allowed to evaluate the issues. Additionally, the content of the evaluations have not always met station procedural requirements or met applicable regulatory requirements. The licensee check in self-assessment also identified deficiencies in this area and provided corrective actions or recommendations to improve performance in this area.

c. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000461/2015001-00: Division 1 and Division 2 Reactor Water Cleanup System High Differential Flow Instruments Become Incapable of Performing their Safety Function

This event occurred on February 6, 2015. At 11:00 p.m., the division 1 reactor water cleanup (RT) system differential flow indicator was observed to be reading greater than 10 gallons per minute different from its sister channel, resulting in it failing its channel check. Operators declared this instrument inoperable in accordance with CPS TS 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation," which required the operators to place the channel in trip within 24 hours. At 11:55 p.m., the division 2 RT differential flow indicator indicated out of specification, requiring entry into 3.3.6.1, E.1 for two channels inoperable. With both channels inoperable, the leakage detection system was incapable of performing its containment isolation function. The licensee restored both divisions to an operable status on February 7, 2015, by performing a fill and vent of the system. The cause of the event were RT isolation valves to the main condenser leaking by resulting in air voids being allowed to enter into the RT system piping causing the differential flow instrumentation to provide false readings. The corrective actions in response to this issue were to pressurize the letdown line to prevent the development of voids in the line.

The inspectors reviewed the licensee event report (LER) and supporting documentation and did not identify any findings since the valve leak-by was not within the licensee's ability to foresee and correct. Documents reviewed as part of this inspection 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 05000461/2015004-00 and 2015004-01: Trip of Emergency Reserve Auxiliary Transformer Static VAR Compensator Causes Positive Secondary Containment Pressure Following Lightning Strike on 138 kV Offsite Source

This event occurred on June 26, 2015. At 3:01 a.m., thunderstorms were moving through the area and a phase to ground fault occurred on the 138 kV AC line from the South Bloomington substation. Breakers isolated the line, then reclosed as designed,

restoring the 138 kV AC line. The voltage transient was not long enough to cause a fast transfer from the emergency reserve auxiliary transformer (ERAT) to the reserve auxiliary transformer (RAT). However, the transient was enough of a disruption to cause the static var compensator (SVC) to trip and the division 1 fuel building ventilation (VF) dampers to close, which tripped VF supply and exhaust fans. The loss of the VF system caused secondary containment pressure to increase beyond the TS value. Operators restored the VF system to service within 20 minutes which restored secondary containment pressure. The ERAT SVC was returned to service at 4:57 a.m. The LER as reviewed. The equipment responses noted in the LER were determined to be in accordance with system design. No findings or violations of NRC requirements were identified since the potential impact of thunderstorms was not within the licensee's ability to foresee. Other 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.

.3 (Closed) Licensee Event Report 05000461/2016001-00: Continuous Containment Purge Exhaust Fan Trip due to Unvalidated Assumptions in Work Planning Resulted in an Unanalyzed Condition of Primary to Secondary Containment Differential Pressure and Safety System Functional Failure

This event occurred on January 20, 2016. At 11:11 p.m., during planned clean and inspect maintenance activities on the 4160/480 Volt Unit Substation K, the Unit Substation K switchgear breaker for Continuous Containment Purge (CCP) exhaust fan 'A' was racked out which resulted in the tripping off the CCP 'B' exhaust fan. This caused Clinton Power Station to enter TS Limiting Condition for Operation 3.6.1.4, "Primary Containment Pressure," due to primary to secondary containment pressure being greater than +0.25 psid. Operations corrected the condition and restored primary to secondary containment differential pressure to within limits at 11:39 p.m. The cause of this event was that the station did not validate assumptions resulting in an inadequate work package. The licensee's corrective actions included updating the maintenance planning checklist, performing read and signs and presenting a case study to maintenance planning personnel on this event.

Based on the inspectors review, a violation of NRC requirements was identified and documented in NRC Integrated Inspection Report 05000461/2016001. Documents reviewed during this inspection 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.

.4 (Closed) Licensee Event Report 05000461/2016004-00: Trip of Emergency Reserve Auxiliary Transformer Static VAR Compensator Causes Positive Secondary Containment Pressure Following Lightning Strike on 138 kV Offsite Source

This event occurred on March 30, 2016. At 3:45 p.m., thunderstorms were moving through the area, and the 138 kV AC line from the South Bloomington substation isolated, then reclosed restoring power. The voltage transient was not long enough to cause a fast transfer from the ERAT to the RAT, but was enough of a disruption to cause the SVC to trip and division 1 VF dampers to close, which tripped VF supply and exhaust fans.

The loss of the VF system caused secondary containment pressure to increase beyond the TS value. Operators restored secondary containment pressure by manually starting the standby gas treatment system at 3:47 p.m.

The LER was reviewed. The equipment responses noted in the LER were determined to be in accordance with system design. No findings or violations of NRC requirements were identified since the potential impact of thunderstorms was not within the licensee's ability to foresee. Other 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.

.5 (Closed) Licensee Event Report 05000461/2016005-00: Insulator Failure on the Reserve Auxiliary Transformer Results in a Loss of Secondary Containment Vacuum

This event occurred on April 2, 2016. At approximately 12:57 p.m., the RAT and SVC tripped due a failure of the 'A' phase insulator 345 kV circuit switcher 4538 in the switchyard. The site was experiencing high winds at the time. As a result of the voltage transient caused by automatic transfer to the ERAT, the division 1 VF system isolation dampers closed causing a trip of VF supply and exhaust fans. The effect of this condition was that secondary containment (SC) rose to slightly greater than 0 inches water gauge and exceeded the TS limit of 0.25 inch water gauge. Operators restored SC pressure at 1:00 p.m. by manually starting the standby gas treatment system. The RAT was successfully returned to service following replacement of the broken 345 kV circuit switcher 4538 insulator stack ('A' phase).

The LER was reviewed. This event involved failure of an Ohio Brass insulator, which have been known to have manufacturing defects since a loss of single phase event occurred at Byron Station in 2012. The licensee had a replacement program in place, however had not replaced this particular insulator prior to failure. As corrective action, the licensee accelerated the replacement program, having now replaced all but 54 insulators and scheduling the rest to be replaced by the end of refueling outage C1R17. The equipment responses noted in the LER were determined to be in accordance with system design. No findings or violations of NRC requirements were identified. Other 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.

.6 (Closed) Licensee Event Report 05000461/2016008-00: Implementation of Enforcement Guidance Memorandum 11-003, Revision 3

On May 18, 2016, and May 23, 2016, CPS performed Operations with the Potential to Drain the Reactor Vessel (OPDRV) while in Mode 5 without an operable secondary containment. An OPDRV is an activity that could result in the draining or siphoning of the reactor pressure vessel water level below the top of fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel. Secondary containment is required by TS 3.6.4.1 to be operable during OPDRV. The required action for this specification is to suspend OPDRV operations. Therefore, entering the OPDRV without establishing secondary containment integrity was considered a condition prohibited by TS as defined by 10 CFR 50.73(a)(2)(i)(B).

The NRC issued Enforcement Guidance Memorandum (EGM) 11–003, Revision 3, on January 15, 2016, to provide guidance on how to disposition boiling water reactor licensee noncompliance with TS containment requirements during OPDRV operations. The NRC considers enforcement discretion related to secondary containment operability during Mode 5 OPDRV activities appropriate because the associated interim actions necessary to receive the discretion ensure an adequate level of safety by requiring licensees' immediate actions to (1) adhere to the NRC plain language meaning of OPDRV activities; (2) meet the requirements which specify the minimum makeup flow rate and water inventory based on OPDRV activities with long drain down times; (3) ensure that adequate defense in depth is maintained to minimize the potential for the release of fission products with secondary containment not operable by (a) monitoring RPV level to identify the onset of a loss of inventory event, (b) maintaining the capability to isolate the potential leakage paths, (c) prohibiting Mode 4 (cold shutdown) OPDRV activities, and (d) prohibiting movement of irradiated fuel with the spent fuel storage pool gates removed in Mode 5; and (4) ensure that licensees follow all other Mode 5 TS requirements for OPDRV activities.

The inspectors reviewed LER 2016–008–00 for potential performance deficiencies and/or violations of regulatory requirements. The inspectors also reviewed the stations implementation of the EGM during OPDRVs:

1. The inspectors observed that the OPDRV activities were logged in the control room narrative logs, the log entry appropriately recorded the standby source of makeup water designated for the evolutions, and defense in-depth criteria were in place.
2. The inspectors noted that the reactor vessel water level was maintained at least 22 feet and 8 inches over the top of the reactor pressure vessel flange as required by TS 3.9.6. The inspectors also verified that at least one safety-related pump was the standby source of makeup designated in the control room narrative logs for the evolutions. The inspectors confirmed that the worst case estimated time to drain the reactor cavity to the reactor pressure vessel flange was greater than 24 hours.
3. The inspectors reviewed Engineering Change documents which calculated the time to drain down during these activities and the feasibility of pre-planned actions the station would take to isolate potential leakage paths during these periods of time. The inspectors verified that the OPDRVs were not conducted in Mode 4 and that the licensee did not move irradiated fuel during the OPDRVs. The inspectors noted that CPS had in place a contingency plan for isolating the potential leakage path and verified that two independent means of measuring reactor pressure vessel water level were available for identifying the onset of loss of inventory events.
4. The inspectors verified that all other TSs requirements were met during the May 18, 2016 and May 23, 2016 OPDRVs with secondary containment inoperable.

Technical Specification 3.6.4.1 requires, in part, that secondary containment shall be operable during OPDRV. Technical Specification 3.6.4.1, Condition C, requires the licensee to initiate action to suspend OPDRV immediately when secondary

containment is inoperable. Contrary to the above, on May 18, 2016, and May 23, 2016, CPS performed OPDRV activities while in Mode 5 without an operable secondary containment. Specifically, the station performed the following OPDRV activities without an operable secondary containment:

- shifting RHR 'B' shutdown cooling to the upper pools; and
- shifting RHR 'B' shutdown cooling from the upper pools to the feedwater lines.

Because the violation occurred during the discretion period described in EGM 11–003, Revision 3, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation.

In accordance with EGM 11–003, Revision 3, each licensee that receives discretion must submit a license amendment request within 4 months of the NRC staff's publication in the Federal Register of the notice of availability for a generic change to the standard TS to provide more clarity to the term OPDRV. The inspectors observed that CPS is tracking the need to submit a license amendment request in its CAP as AR 01273398.

This LER is closed. This inspection constituted one event follow-up sample as defined in IP 71153–05.

40A5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation at Operating Plants (60855.1)

a. Inspection Scope

The inspectors reviewed documents, interviewed plant personnel, and performed in-field observations to assess the licensee's performance as it relates to the operation of the Independent Spent Fuel Storage Installation (ISFSI). The inspectors evaluated whether changes made to the programs and procedures since the last inspection were consistent with the license or Certificate of Compliance (CoC) and did not reduce the effectiveness of the program. The inspectors also reviewed whether changes were evaluated in accordance with the requirements stated in 10 CFR 72.212(b), 10 CFR 50.59, and 10 CFR 72.48.

The inspectors independently assessed whether dry cask storage activities were performed in a safe manner and in compliance with approved procedures. The inspectors verified that the licensee had identified each fuel assembly placed in the ISFSI, had recorded the parameters and characteristics of each fuel assembly, and had maintained a record of each fuel assembly as a controlled document.

Specifically, the inspectors observed the licensee perform the following activities: moving spent fuel assemblies into the Multi-Purpose Canister (MPC); performing hydrostatic testing on the MPC lid-to-shell weld; conducting forced helium dehydration (FHD); backfilling the MPC with helium; performing vent and drain port welding and non-destructive examination (both visual and dye penetrant examinations); performing helium leak testing; and rigging for heavy load lifts.

The inspectors performed a walkdown of the ISFSI pad, the ISFSI haul path, and the unloaded HI-STORM while it was staged in track alley. The inspectors also reviewed the following documents: radiological surveys, selected 72.48 reviews, and records of fuel assemblies and physical inventories.

A review of corrective action reports written since the last ISFSI inspection indicated that the licensee was effectively identifying and correcting conditions adverse to quality.

b. Findings

Dry Cask Storage Procedures were not Adequate to Ensure Correct Field Configuration

Introduction: A self-revealed, Severity Level IV violation of 10 CFR 72.150, "Instructions, Procedures, and Drawings," was identified for the failure of the licensee to ensure that ISFSI procedures contained the appropriate level of detail for the circumstances such that important loading activities would be satisfactorily accomplished.

Description: The process of safely moving spent nuclear fuel from the spent fuel pool (SFP) into dry storage requires the performance of important-to-safety activities, such as preparing a HI-TRAC and MPC for placement into the spent fuel pool for fuel loading and hydrostatic testing of the MPC lid-to-shell weld. These important-to-safety activities are subject to the procedure requirements of the licensee's quality assurance program. During this inspection, there were two examples of the licensee failing to have procedures appropriate to the circumstances to ensure that these important-to-safety fuel loading activities were performed correctly.

The first example of the failure to have a procedure appropriate to the circumstances led to the placement of the MPC-009 in the HI-TRAC in the incorrect orientation. Procedure HPP-2226-200, Revision 0, "MPC Loading at Clinton," was not adequate to ensure that the MPC was correctly oriented in the HI-TRAC. Although this procedure contained a figure that showed the placement of the MPC in the HI-TRAC with a Plant North arrow, and the "Drain Line" located in the Northeast corner of the MPC, at the time of MPC placement into the HI-TRAC the drain line has not yet been placed and instead the MPC sump needs to be located in the Northeast corner of the MPC.

For operational purposes, the MPC sump and the drain line needed to be aligned when the MPC lid was set on the MPC later in the loading process. This sump and drain line alignment was important in processing the MPC and also helped to ensure that the MPC lid was level for the lid-to-shell welding process.

In the HI-STORM FW system, the MPC sump at the bottom of the MPC was not readily visible from above the canister without a camera, and the most readily apparent indications of the orientation of the MPC shell were the match marks on the shell itself, which were not referenced in the procedure. On September 2, 2016, the MPC was incorrectly placed into the HI-TRAC with the MPC Sump located in the Northwest corner instead of the Northeast corner of the MCP as part of the licensee's dry run process.

The incorrect placement of the MPC in the HI-TRAC was not discovered until September 13, 2016, after fuel had been loaded into the MPC, the MPC lid was set, the loaded HI-TRAC was removed from the SFP, and the tape covering the match marks on

the MPC shell was removed. At this point, the licensee noticed that the match marks on the MPC shell and MPC lid were misaligned relative to each other by 90 degrees. This issue was documented in the licensee's CAP as AR 02715357.

As a result of the misalignment between the MPC shell and MPC lid, the licensee returned the loaded HI-TRAC to the SFP to remove the MPC lid and confirm the location of the MPC sump. Returning the MPC to the SFP also ended the licensee's time-to-boil clock, which began when the MPC lid was initially set.

The licensee, upon determining that the MPC shell had been incorrectly oriented in the HI-TRAC, made temporary procedural changes to align the MPC lid with the incorrectly oriented MPC shell and proceed with loading activities.

Additionally, as the spent fuel moves from the SFP into the MPC were based on the assumed orientation of the MPC shell and the assumed location of the drain line, all of the fuel assemblies loaded into MPC-009 were not loaded in accordance with the fuel loading calculation IP-F-0177, Revision 0. This issue was documented in the licensee's CAP as AR 02715814.

The second example of the failure to have a procedure appropriate to the circumstances led to the failure to properly install two thermocouples during the hydrostatic test of the MPC. Without the thermocouples installed, the system would not be closed and the hydrostatic test could not be adequately performed. Procedure HPP-2226-300, Revision 4, "MPC Sealing at Clinton," was not adequate to ensure that the two thermocouples were appropriately installed during the hydrostatic test of the MPC on September 29, 2016.

Step 7.4.1 of HPP-2226-300 directs the user to, "SET UP the hydrostatic test skid and FHD manifold as shown in Attachment 8.10," "Hydrostatic Test System and Blowdown Setup." Attachment 8.10 contains a system diagram which contains several dozen components, including thermocouples TG-3 and TG-4. The installation of TG-3 and TG-4 for the hydrostatic test of the MPC was not referenced or verified anywhere else in the procedure. Additionally, TG-3 and TG-4 were not used to measure temperature during the hydrostatic test of the MPC, and they would only be used once FHD began.

On September 29, 2016, TG-3 and TG-4 were not installed as shown in Attachment 8.10 of procedure HPP-2226-300, and there was unexpected leakage of potentially contaminated water during the hydrostatic test of MPC-009 in Step 7.4.21 of procedure HPP-2226-300. The unexpected leakage occurred from the ports where the thermocouples should have been installed previously in Step 7.4.1. This issue was documented in the licensee's CAP as AR 02721944.

Analysis: The inspectors determined that the licensee's failure to have procedures appropriate to the circumstances to ensure that important to safety fuel loading activities are performed correctly is contrary to the quality assurance requirements of 10 CFR Part 72, Subpart G. In accordance with Section 2.2 of the Enforcement Policy, 10 CFR Part 72 violations are not subject to the significance determination process and traditional enforcement will be used for these facilities. Traditional enforcement violations are not assessed for cross-cutting aspects.

The violation was determined to be of more than minor significance using IMC 0612, Appendix E, "Examples of Minor Issues." Example 4e is applicable to this violation in that the MPC was incorrectly oriented in the transfer cask and then loaded with spent fuel in this incorrect configuration. Example 4b is also applicable to this violation in that unexpected leakage occurred during the hydrostatic test as a result of the failure to install the thermocouples.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the enforcement policy violation examples, it should be assigned a severity level: (1) Commensurate with its safety significance; and (2) informed by similar violations addressed in the violation examples. The inspectors found no similar violations in the violation examples. The inspectors verified that the spent fuel, as it was actually loaded into MPC-009, complied with the Fuel Specifications and Loading Conditions specified in Section 2.1 of Appendix B of the HI-STORM FW, Amendment 0, Revision 1, of the CoC. Additionally, the unexpected leakage during the hydrostatic test of the MPC had no appreciable actual safety consequences. Therefore, the violation was determined to be a Severity Level IV violation.

Enforcement: Title 10 CFR 72.150 of Subpart G states, in part, that, "the licensee shall prescribe activities affecting quality by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall require that these instructions, procedures, and drawings be followed. The instructions, procedures, and drawings must include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Contrary to the above, on September 2 and September 29, 2016, the licensee failed to have procedures appropriate to the circumstances for important-to-safety fuel loading activities affecting quality. Specifically, procedure HPP-2226-200, Revision 0, "MPC Loading at Clinton," was not adequate to ensure that the MPC was correctly oriented in the HI-TRAC on September 2, 2016, and procedure HPP-2226-300, Revision 4, "MPC Sealing at Clinton," was not adequate to ensure that two thermocouples were appropriately installed during the hydrostatic test of the MPC on September 29, 2016.

The licensee entered both of these issues into its CAP and recovery actions were immediately initiated to place the MPC and surroundings into a safe condition. Also, procedures were reviewed and revised and significant additional oversight was provided in the field.

This violation is being treated as an NCV, consistent with Section 2.3.2.a. of the Enforcement Policy, because it was of very low safety significance and was entered into the licensee's corrective action program as AR 02715357, AR 02715814, and AR 02721944. **(NCV 05000461/2016004-02; NCV 07201046/2016003-01: Dry Cask Storage Procedures Were Not Adequate to Ensure Correct Field Configuration)**

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 12, 2017, the inspectors presented the inspection results to Mr. T. Stoner, 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:

- The results of the EP Program inspection were discussed with B. Kapellas, Plant Manager, at the Clinton Station, on October 6, 2016.
- The 2016 licensed operator annual operating test results were discussed with Mr. G. Vaught, Operator Requalification Training, via telephone on November 3, 2016;
- The ISFSI inspection results were presented to Mr. J. E. Cunningham, Maintenance Director, and other members of the licensee's management and staff via teleconference on December 8, 2016; and
- The Annual Review of EAL and Emergency Plan Changes were discussed with Mr. B. Kapellas, Plant Manager, on December 20, 2016.

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

T. Stoner, Site Vice President
B. Kapellas, Plant Manager
R. Bair, Chemistry Manager
S. Stricklan, Shift Operations Superintendent
J. Cunningham, Maintenance Director
C. Dunn, Operations Director
C. Propst, Work Management Director
M. Friedmann, Emergency Preparedness Manager
S. Gackstetter, Engineering Director
M. Heger, Senior Manager Plant Engineering
N. Hightower, Radiation Protection Manager
T. Krawyck, Senior Manager Plant Engineering
W. Marsh, Security Manager
S. Minya, Operations Training Manager
D. Shelton, Regulatory Assurance Manager
S. O'Riley, Emergency Preparedness Coordinator

U.S. Nuclear Regulatory Commission

K. Stuedter, Chief, Reactor Projects Branch 1
W. Schaup, Clinton Senior Resident Inspector
E. Sanchez Santiago, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

- | | | |
|---------------------|--------------|---|
| 05000461/2016004-01 | NCV | Failure to Demonstrate the Condition of Flood Seals Was Being Effectively Controlled (Section 1R12) |
| 05000461/2016004-02 | SLIV
/NCV | Dry Cask Storage Procedures Were Not Adequate to Ensure Correct Field Configuration (Section 4OA5) |

Closed

- | | | |
|---------------------|-----|--|
| 05000461/2015001-00 | LER | Division 1 and Division 2 Reactor Water Cleanup System High Differential Flow Instruments Become Incapable of Performing Their Safety Function (Section 4OA3.1) |
| 05000461/2015004-00 | LER | Trip of Emergency Reserve Auxiliary Transformer Static VAR Compensator Causes Positive Secondary Containment Pressure Following Lightning Strikes on 138 kV Offsite Source (Section 4OA3.2) |
| 05000461/2015004-01 | LER | Trip of Emergency Reserve Auxiliary Transformer Static VAR Compensator Causes Positive Secondary Containment Pressure Following Lightning Strikes on 138 kV Offsite Source (Section 4OA3.2) |
| 05000461/2016001-00 | LER | Continuous Containment Purge Exhaust Fan Trip Due to Unvalidated Assumptions in Work Planning Resulted in an Unanalyzed Condition of Primary to Secondary Containment Differential Pressure and Safety Functional Failure (Section 4OA3.3) |
| 05000461/2016004-00 | LER | Trip of the Emergency Reserve Auxiliary Transformer Static VAR Compensator Causes Positive Secondary Containment Pressure Following Lighting Strike on 138kV Offsite Source (Section 4OA3.4) |
| 05000461/2016005-00 | LER | Insulator Failure of the Reserve Auxiliary Transformer Results in a Loss of Secondary Containment Vacuum (Section 4OA3.5) |
| 05000461/2016008-00 | LER | Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 3 (Section 4OA3.6) |

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

- AR 02614082; 2015 UHS Dredge Facility Inspection Results by MWH Enhancements
- AR 02614067; 2015 Main Dam Inspection Results by MWH Enhancements
- Y-109767; Clinton Power Station Cooling Lake Dam Emergency Action Plan Communication Drill Exercise Critique
- 2015 UHS Confined Disposal Facility Clinton Power Station Inspection Report; December 2015
- Clinton Main Dam and Appurtenant Works Inspection Report; December 2015

1R04 Equipment Alignment

- CPS 3312.01E001; Residual Heat Removal Electrical Lineup; Revision 17
- CPS 3310.01V001; Reactor Core Isolation Cooling Valve Lineup; Revision 12e
- CPS 3312.01V001; Residual Heat Removal System Valve Lineup; Revision 17c
- CPS 3312.01V002; Residual Heat Removal System Instrumentation Valve Lineup; Revision 9a
- CPS 3310.01E001; Reactor Core Isolation Cooling Electrical Lineup; Revision 16
- CPS 3310.01V002; Reactor Core Isolation Cooling Instrument Valve Lineup; Revision 9e
- CPS 3319.01V002; Standby Gas Treatment Instrumentation Valve Lineup; Revision 6a
- CPS 3319.01E001; Standby Gas Treatment Electrical Lineup; Revision 11
- CPS 3319.01V001; Standby Gas Treatment Valve Lineup; Revision 8
- CPS 3402.01V001; Control Room HVAC Valve Lineup; Revision 17a
- CPS 3402.01E001; Control Room HVAC Electrical Lineup; Revision 10e
- CPS 3402.01V002; Control Room HVAC Instrument Valve Lineup; Revision 6
- CPS 3402.01P001; Control Room HVAC Train Shifting; Revision 6d

1R05 Fire Protection

- CPS 1893.04M122; 762 Auxiliary Non-Safety-Related Switchgear Prefire Plan; Revision 5
- CPS 1893.04M133; 781 Auxiliary Div 1 Containment Electrical Penetrations Prefire Plan; Revision 5
- CPS 1893.04M121; 762 Auxiliary Containment Electrical Penetrations Prefire Plan; Revision 5
- CPS 1893.04M131; 781 Auxiliary Div 2 Containment Electrical Penetration Prefire Plan; Revision 5
- CPS 1893.04M123; 762 Auxiliary Containment Electrical Penetrations Prefire Plan; Revision 5

1R06 Flooding

- CC-AA-309-1001; Internal Flooding Calculations; Revision 9
- CC-AA-309-1001; Design Analysis Major Revision Cover Sheet for Suppression Pool Equalization Levels (EC 380335); Revision 5
- M05-1047; P&ID Fuel Building and HPCS Floor Drain System; Revision L
- M05-1074; P&ID High Pressure Core Spray; Revision F

- A28-1000-01A; Fuel Building Basement Plan Area 1; Revision F
- A28-1000-03A; Fuel Building Basement Plan Area 3; Revision T

1R11 Licensed Operator Requalification Program

- OP-AA-101-111-1001; Operations Standards and Expectations; Revision 17
- OP-AA-300; Reactivity Management; Revision 9
- OP-CL-108-101-1003; Operations Department Standards and Expectation; Revision 35
- TQ-AA-150; Operator Training Programs; Revision 12
- TQ-AA-155; Conduct of Simulator Training and Evaluation; Revision 5
- CPS 3005.01; Unit Power Changes; Revision 43
- C17-006; Reactivity Maneuver Guidance Sheet; December 11, 2016

1R12 Maintenance Effectiveness

- ER-AA-310; Implementation of Maintenance Rule; Revision 9
- ER-AA-310-1001; Maintenance Rule Scoping; Revision 4
- ER-AA-310-1002; Maintenance Rule Functions – Safety Significance Classification; Revision 3
- ER-AA-310-1003; Maintenance Rule – Performance Criteria Selection; Revision 4
- ER-AA-310-1004; Maintenance Rule – Performance Monitoring; Revision 13
- ER-AA-310-1005; Maintenance Rule – Dispositioning Between (a)(1 and (a)(2); Revision 7
- ER-AA-310-1006; Maintenance Rule – Expert Panel Roles and Responsibilities; Revision 5
- CC-AA-309-1001; Internal Flooding Calculations; Revision 9
- AR 01197979; IER – Flood Seals do Not Have Periodic Inspection Program
- AR 02690138; NRC Question: RHR B Penetration Flood Seals
- AR 02680762; NRC Question Documentation on Flood Penetration Seal Inspect
- AR 00976295; ECCS Room Floor Drain Piping Connected to RW Pipe Tunnel
- AR 02714398; 10 RHR B Flood Seals Inaccessible for Inspection
- AR 02476742; Maintenance Preventable Functional Failure of RS Component
- AR 02637511; Unavailable Time Used in EMR Does Not Align with EACE Fail Time
- ER-CL-450-1007; Clinton Surveillance Inspection Program for Flood Seals; Revision 1
- CPS 9601.01; Fire Rated Assemblies and Penetrations Sealing Devices; Revision 28f
- ER-AA-450; Structures Monitoring; Revision 5
- Y-107961; Maintenance Rule Program – Structural Monitoring Assessment; March 31, 1998
- Y-109482; Maintenance Rule Program – Structural Monitoring Assessment; June 23, 2004
- Y-109621; “Maintenance Rule Program – Structural Monitoring Assessment; February 3, 2009
- Y-109738; Maintenance Rule Program – Structural Monitoring Assessment; Mach 18, 2014
- Figure FP-2a; Fire Zone Boundaries, Auxiliary, Fuel Building and Containment Basement Floor Plan-EL 707’-6” & 712’-0”; Revision 10

1R13 Maintenance Risk Assessments and Emergent Work Control

- AD-AA-3000; Nuclear Risk Management Process; Revision 1
- AD-AA-3000; Nuclear Risk Management Process; Revision
- ER-AA-600; Risk Management; Revision 7
- ER-AA-600-1011; Risk Management Program; Revision 14
- ER-AA-600-1012; Risk Management Documentation; Revision 12
- ER-AA-600-1014; Risk Management Configuration Control; Revision 7
- ER-AA-600-1042; On-Line Risk Management; Revision 9
- OP-AA-108-117; Protected Equipment Program; Revision
- WC-AA-101; On-Line Work Control Process; Revision 26

- WC-AA-104; Integrated Risk Management; Revision 23
- WC-AA-101; On-Line Work Control Process; Revision 26
- WC-AA-101-1006; On-Line Risk Management and Assessment; Revision 2
- WO 1793670; Establish Fire Hose Makeup to Spent Fuel Pool

1R15 Operability Evaluations

- OP-AA-108-115; Operability Determinations; Revision 16
- ER-CL-390-1001; Control Room Envelope Habitability Program Implementation; Revision 0
- AR-CL-390; Control Room Envelope Habitability Program; Revision 0
- CPS 9070.02; Control Room HVAC High Rad Initiation Functional; Revision 33
- CPS 3402.01; Control Room HVAC; Revision 30b
- CPS 9070.01D001; Control Room HVAC Air Filter Package Operability Test Run Data Sheet; Revision 26a
- CPS 9070.01; Control Room HVAC Air Filter Package Operability Test Run; Revision 27f
- CPS 9070.05D001; Control Room Differential Pressure Test Data Sheet; Revision 0d
- WO 1689096; 9070.02 VC Air Cleanup Auto Start
- WO 1939229; Ops Alternate Method to Fill FP B Tank
- AR 02669349; NRC SRI Follow-Up Questions
- AR 02638307; 1SX027C Stroke Time Outside Limits

1R19 Post-Maintenance Testing

- CPS 9061.06D014; Div 2 VG Train Deluge Valve Operability Data Sheet; Revision 37
- CPS 9061.06C014; Div 2 VG Train Deluge Valve Operability Checklist; Revision 38a
- CPS 9067.01D001; SGTS Train Flow/Heater Operability Data Sheet; Revision 28c
- CPS 9080.12; Diesel Generator Fuel Oil Transfer Pump Operability; Revision 37a
- CPS 9080.12D001; Diesel Generator Fuel Oil Transfer Pump Operability Data Sheet; Revision 32d
- CPS 9067.01; Standby Gas Treatment System Train Flow/Heater Operability; Revision 31d
- WO 648016; PMT 1SX071B Verify Correct Operation and Position
- WO 1810920; PMT Perform 9067.01
- WO 1965955; 1DO01PC PMT Comprehensive Test
- WO 1946508; DO Check Valve IST Closure Testing 1DO001C
- WO 1946494; 9080.12 DG Fuel Oil Transfer Pump Operability 1C

1R22 Surveillance Testing

- CPS 9058.02; RCIC/ECCS Water Leg Pump Comprehensive Testing; Revision 2c
- CPS 9058.02D001; RCIC/ECCS Water Leg Pump Comprehensive Testing Datasheet; Revision 3c
- CPS 9054.02; Reactor Core Isolation Cooling Valve Operability Checks; Revision 42d
- CPS 9054.06; RCIC Discharge Header Filled and Flow Path Verification and Flow Controller Checks; Revision 27d
- CPS 9015.01; Standby Liquid Control System Operability; Revision 41d
- CPS 9052.01; LPCS/RHR A Pumps and LPCS/RHR Water Leg Pump Operability; Revision 49
- CPS 9052.01D001; LPCS/RHR A Pump and LPCS/RHR A Water Leg Pump Operability Data Sheet; Revision 47c
- WO 1851885; RCIC Water Leg Pump Comprehensive Pump Test
- WO 1945364; 9054.02A20 RCIC Valve Operability
- WO 1945363; 9054.01B20 RCIC System Operability
- WO 1957161; 9054.06R20 Verify System Flow Path Filled and Controller Alignment

- WO 1952666; 9015.01B23 SLC Pump Operability
- WO 1944874; 9052.01A21 RHR Pump Operability
- WO 1944872; 9052.01R21 LPCS Pump Operability
- WO 1803468; 9052.01 1E21C001 Comprehensive Pump Test
- WO 1944871; 9052.01S21 LPCS/RHR A Water Leg Pump Operability

1EP2 Alert and Notification Evaluation (71114.02)

- Offsite Emergency Plan Alert and Notification System Addendum for Clinton Station; May 2013
- U. S. Department of Homeland Security, FEMA Letter; Backup Alert and Notification System; December 10, 2012
- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 28
- EP-AA-1003; Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station; Revision 26
- EP-CL-1000; Exelon Nuclear Clinton Radiological Emergency Plan; Revision 0
- EP-MW-121-1005; Siren Outage Reporting and Monitoring; Revision 3
- EP-MW-121-1006; Contracted Siren Maintenance Oversight; Revision 1
- Clinton Station Warning System Annual Maintenance & Operational Reports; September 2015 through September 2016
- Clinton Station Monthly Siren Availability Reports; September 2014 through September 2016
- IR 02059772; EP - Siren Failure (CL09); September 8, 2014
- IR 02415487; EP - Siren Failure (CL13); November 3, 2014
- IR 02519593; EP - Siren Failure (CL12); June 8, 2015
- IR 02534700; EP - Siren Failure (CL10); July 29, 2015

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 28
- EP-AA-1003; Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station; Revision 26
- EP-CL-1000; Exelon Nuclear Clinton Radiological Emergency Plan; Revision 0
- TQ-AA-113; ERO Training and Qualification; Revision 29
- Quarterly Unannounced Off-Hours Call-In Augmentation Drill Results; October 2014 through September 2016
- Emergency Response Organization Call-Out Roster; October 4, 2016
- IR 02623357; Everbridge Notification Delayed To Some ERO Members; February 8, 2016
- IR 02626493; Everbridge Text Message Delayed To Some ERO Members; February 15, 2016

1EP4 Emergency Action Level and Emergency Plan Changes

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 28
- EP-AA-120; Emergency Plan Administration; Revision 19
- EP-AA-120-1001; 10 CFR 50.54(q) Change Evaluation; Revision 8
- EP-AA-1003; Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station; Revision 25
- EP-AA-1003 Addendum 1; Clinton Station On-Shift Staffing Technical Basis; Revision 1
- EP-AA-1003 Addendum 3; Emergency Action Levels for Clinton Station; Revisions 0 and 1
- 50.54(q) Evaluation No. 14-108; EP-AA-1000, "Exelon Nuclear Standardized Radiological Emergency Plan" (Revision 1) Evaluation and Effectiveness Review; February 13, 2016

1EP5 Maintenance of Emergency Preparedness (71114.05)

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 28
- EP-AA-1003; Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station; Revision 26
- EP-CL-1000; Exelon Nuclear Clinton Radiological Emergency Plan; Revision 0
- PI-AA-125; Corrective Action Program (CAP) Procedure; Revision 4
- PI-AA-126-1001-F-01 (AR 2625290); Focused Area Self-Assessment-NRC Baseline Inspection Assessment; August 30, 2016
- NOSA-BYR-15-03; Emergency Preparedness Audit Report; April 15, 2015
- NOSA-BYR-16-03; Emergency Preparedness Audit Report; April 13, 2016
- Call-In Augmentation Drill Results; September 2014 through July 2016
- Clinton 2014 Off-Year Exercise Evaluation Report; September 16, 2014
- Clinton 2015 Hostile Action Based NRC Graded Exercise Evaluation Report; November 18, 2015
- Clinton Power Station 2014 Assembly & Accountability Drill Report; December 15, 2014
- Clinton Power Station 2015 Assembly & Accountability Drill Report; December 20, 2015
- Clinton Power Station 2014 Medical and Health Physics Drill Findings and Observation Report; September 6, 2014
- Clinton Power Station 2015 Medical and Health Physics Drill Findings and Observation Report; September 24, 2015
- Clinton 2016 Off-Year Exercise Evaluation Report; August 3, 2016
- IR 02405146; Enhancement To EAL Matrix; November 2, 2014
- IR 02534569; Full Scale Drill Issues Critiqued In The OSC; July 21, 2015
- IR 02572018; Medical/HP Drill Enhancements; September 24, 2015
- IR 02636131; Lessons Learned From Issuance Of New EALS; March 4, 2016
- IR 02664254; EP Focus Drill Critique Issues; May 2, 2016

40A1 Performance Indicator Verification

- ER-AA-2008; Mitigating Systems Performance Index Monitoring and Margin Evaluation; Revision 4
- CC-AA-102; Design Input and Configuration Change Impact Screening; Revision 29
- CL-MSPI-01; Clinton MSPI Basis Document; Revision 10
- CPS 9000.01; Control Room Surveillance Log; Revision 35e
- CPS 9000.01D001; Control Room Surveillance Log – Mode 1,2,3 Data Sheet; Revision 55c
- CPS 3315.02; Leak Detection; Revision 14e
- MSPI Derivation Report; MSPI Cooling Water System Unavailability Index
- MSPI Derivation Report; MSPI Cooling Water System Unreliability Index
- MSPI Derivation Report; MSPI Residual Heat Removal System Unavailability Index
- MSPI Derivation Report; MSPI Residual Heat Removal System Unreliability Index
- AR 02592557; Revised Sulzer Div 3 SX Pump Failure Analysis
- AR 02646134; Div 2 VX Condensing Unit Stop/Restarted During SX Flush
- AR 02620350; Unnecessary Div 3 SX Pump Run
- AR 02627652; NRC Resident Question on Div 3 SX Pump Failure and MSPI
- AR 02650644; SX A Pump Room Supply Fab Discharge Indicator Off-Scale Low
- AR 02650650; SX B Pump Room Supply Fab Discharge Indicator Off-Scale Low
- AR 02590818; RHR B/C WLP Leak Degraded
- AR 0269223; RHR B HX Tube Plugging
- AR 02714225; Increased Leakage from RHR B/C Water Leg Pump
- NRC Performance Indicator Data, Emergency Preparedness – Drill/Exercise Performance, 4th Quarter 2015 through 2nd Quarter 2016

- NRC Performance Indicator Data, Emergency Preparedness – ERO Readiness, 4th Quarter 2015 through 2nd Quarter 2016
- NRC Performance Indicator Data, Emergency Preparedness – Alert and Notification System Reliability, 4th Quarter 2015 through 2nd Quarter 2016
- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 7
- IR 02611383; Performance Data Correction Needed; October 13, 2015

4OA2 Identification and Resolution of Problems

- AR 02678348; Reporting of Defects and Noncompliance
- AR 02689315; Deviation of K-Line Circuit Breaker Secondary Latch
- AR 02537305; Limit Switches EA 180 Manufactures in a Specific Date
- AR 02575371; Potential Defect pm P/N 535-601
- AR 02566622; Potential Part 21 Notification
- AR 02616684; Error in Reporting the Variability in Dose Delivered
- AR 02649780; RAT 438 Failure: Numerous Unexpected Alarms 5010-1A, 1B, 1C
- AR 02670593; Water Leak at Flex Hose MS Elbow Taps in DW
- AR 02689365; Initiate CAP Investigation – Flex Inspection Performance
- AR 02440052; A TDRFP Would Not Trip from P680
- AR 03951971; Check in 2668578 Deficiency #1
- AR 03951974; Check in 2668578 Deficiency #2 (RCR 2689365)
- AR 03951976; Check in 2668578 Deficiency #3 (RCR 2614832)
- AR 03951981; Check in 2668578 Deficiency #4 and 11
- AR 03951990; Check in 2668578 Deficiency #5
- AR 03951999; Check in 2668578 Deficiency #6,7,9 and 10
- AR 03952003; Check in 2668578 Deficiency #9
- AR 02668578; Off Year PI&RAassessment
- ABB Failure Analysis Report; Exelon Clinton Transformer Failure Analysis Report; August 25 2015
- AR 01594407; Automatic Trip of Breaker 1AP07EJ
- Doble Failure Analysis Report; Transformer Failure Investigation Report for Gould-Brown Boveri Dry Type Transformer S/N 24-26462; September 10, 2016
- Exelon Power Labs Report; Failure Analysis of Winding Section from an ABB Transformer; January 28, 2016
- PI-AA-125-1006; Investigation Techniques Manual; Revision 2
- PI-AA-125; CAP Procedure; Revision 4
- PI-AA-125-1001; Root Cause Analysis Manual; Revision 2

4OA3 Follow-up Events and Notices of Enforcement Discretion

- CPS 3007.01C005; Operations with a Potential for Draining the Reactor Vessel Checklist; Revision 2c
- AR 02519380; Trip of ERAT SVC 0AP103E and 0AP104E
- AR 02386323; Track Ohio Brass Insulators in 345 kV Switchyard
- AR 02648093; ERAT SVC Tripped
- AR 02649780; RAT 4538 Failure; Numerous Unexpected Alarms 5010-1A, 1C, 8A
- AR 02449013; Div 1 and Div 2 RT Differential Flow Inop
- AR 02450993; Trend IR: RT Delta Flow Issues
- EC 405337; Impact of VF System Isolation on Secondary Containment Ability to Perform Safety Function; Revision 01
- RCR 2649780; Two Weather Related Events Affecting Off-Site Power; May 5, 2016

40A5 Other Activities

- Spent Fuel Loading Campaign Organization Chart; August 22, 2016
- Work Re-Start Action Plan; September 19, 2016
- Clinton Spent Fuel Loading Return to Work Brief; October 3, 2016
- Revised Dry Cask Storage Execution Structure
- AR 02714091; NRC Identified a URI at the Sept. 9, 2016 DCS Project Exit
- AR 02715357; Discovered the MPC Lid was Misaligned to the MPC Shell
- AR 02715814; Dry Cask Coordinates for Fuel Bundles are in Error
- AR 02715814-04; Update the Fuel Selection Calculation IP-F-0177
- AR 02715829; NRC Observation on Dry Cask
- AR 02719232; Inaccurate Document Transmitted to the NRC
- AR 02721944; DCS Test Rig Leakage Observed During Hydro Test
- AR 02739169; NRC Questioned the Dose Survey of MPC-009
- CPS 1019.05; Transient Equipment/Materials; Revision 23c
- EC 404678; ISFSI – Clinton 2016 Dry Cask Storage Campaign Fuel Selection; Revision 0
- EC 404679; Advanced Work Authorization 3, Lower MPC Shims; Revision 1
- EC 404679; Advanced Work Authorization 1, Inspection of MPC Parts; Revision 1
- HI-2135751; HI-STORM FW CoC Radiation Protection Program Dose Rate Limits for Clinton Power Station; Revision 0
- HPP-2226-100; MPC Pre-Operation Inspection; Revision 1
- HPP-2226-200; MPC Loading at Clinton; Revisions 0, 3, 3c
- HPP-2226-300; MPC Sealing at Clinton; Revisions 3, 4
- HPP-2226-400; MPC Transfer at Clinton; Revisions 2, 4
- HPP-2226-500; HI-STORM Movements; Revisions 2, 5
- HPP-2226-700; Responding to Abnormal Conditions; Revisions 2, 3
- HSP-314; Cleaning of Fabricated Components and Finished Products; Revisions 10
- HU-AA-1211-F-02; HLA Briefing Worksheet, DCS Campaign
- IP-F-0177; Fuel Selection Package; Revisions 0, 1, 1a
- IR 02715357-02; Prompt Investigation
- IR 02715357-12; Apparent Cause Investigation Report, Multi-Purpose Canister (MPC) Oriented Incorrectly
- MA-AA-716-001; Quality Material/Components Control and Identification/Segregation of Non-Conforming Items; Revision 8
- RP-CL-300-1002; HI-TRAC Radiation Survey; Revision 0
- RP-CL-300-1002; Attachment 1; HI-TRAC Radiation Survey - MPC Serial Number 009
- RP-CL-300-1003; HI-STORM FW Radiation Survey; Revision 0
- RP-CL-300-1003; Attachment 1; HI-STORM FW Radiation Survey - HI-STORM Serial Number 0014
- WO 01890938 Task 50; Inspection of MPC Components
- WO 01890938 Task 05; RXS Pre-Use Inspection of MPC-009
- WO 01890938 Task 06; Remove Welds and Return MPC to Pool

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ANS	Alert and Notification System
AR	Action Request
CAP	Corrective Action Program
CAPR	Corrective Action to Preclude Repetition
CCP	Continuous Containment Purge
CFR	<i>Code of Federal Regulations</i>
CoC	Certificate of Compliance
CPS	Clinton Power Station
DRP	Division of Reactor Projects
EAL	Emergency Action Level
EGM	Enforcement Guidance Memorandum
EP	Emergency Preparedness
ERAT	Emergency Reserve Auxiliary Transformer
ERO	Emergency Response Organization
FHD	Forced Helium Dehydration
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ISFSI	Independent Spent Fuel Storage Installation
LER	Licensee Event Report
MPC	Multi-Purpose Canister
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OPDRV	Operation to Prevent Draining the Reactor Vessel
OWA	Operator Workaround
PARS	Publicly Available Records System
PI	Performance Indicator
RAT	Reserve Auxiliary Transformer
RCIC	Reactor Core Isolation Cooling
RCR	Root Cause Report
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RT	Reactor Water Cleanup
SC	Secondary Containment
SFP	Spent Fuel Pool
SSC	System, Structure, and Component
SVC	Static Var Compensator
TS	Technical Specification
USAR	Updated Safety Analysis Report
VC	Control Room Ventilation
VF	Fuel Building Ventilation
VG	Standby Gas Treatment

B. Hanson

- 3 -

Letter to Bryan C. Hanson from Karla Stoedter dated February 13, 2017

SUBJECT: CLINTON POWER STATION—NRC INTEGRATED INSPECTION REPORT AND
EXERCISE OF ENFORCEMENT DISCRETION 05000461/2016004,
05000461/2016501 AND 07201046/2016003

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