



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
2443 WARRENVILLE RD. SUITE 210  
LISLE, IL 60532-4352

November 4, 2014

Mr. Michael J. Pacilio  
Senior VP, Exelon Generation Co., LLC  
President and CNO, Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT  
05000461/2014004

Dear Mr. Pacilio:

On September 30, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Clinton Power Station. The enclosed report documents the inspection results, which were discussed on October 24, 2014, with Mr. D. Kemper and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, six NRC-identified findings of very low safety significance were identified. The findings involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Clinton Power Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Clinton Power Station.

M. Pacilio

-2-

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

Sincerely,

***/RA/***

Christine A. Lipa, Chief  
Branch 1  
Division of Reactor Projects

Docket No. 50-461  
License No. NPF-62

Enclosure:  
Inspection Report 05000461/2014004  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-461

License No: NPF-62

Report No: 05000461/2014004

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station, Unit 1

Location: Clinton, IL

Dates: July 1 through September 30, 2014

Inspectors: W. Schaup, Senior Resident Inspector  
E. Sanchez-Santiago, Resident Inspector  
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Approved by: C. Lipa, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

## TABLE OF CONTENTS

SUMMARY OF FINDINGS .....	2
REPORT DETAILS .....	7
Summary of Plant Status .....	7
1. REACTOR SAFETY .....	7
1R01 Adverse Weather Protection (71111.01).....	7
1R04 Equipment Alignment (71111.04Q).....	8
1R05 Fire Protection (71111.05) .....	9
1R11 Licensed Operator Requalification Program (71111.11).....	10
1R12 Maintenance Effectiveness (71111.12).....	11
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13) .....	12
1R15 Operability Determinations and Functional Assessments (71111.15) .....	12
1R18 Plant Modifications (71111.18) .....	18
1R19 Post-Maintenance Testing (71111.19).....	19
1R22 Surveillance Testing (71111.22) .....	20
1EP2 Alert and Notification System Evaluation (71114.02).....	23
1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03).....	23
1EP4 Emergency Action and Emergency Plan Changes (71114.04).....	24
1EP5 Maintaining Emergency Preparedness (71114.05).....	25
1EP6 Drill Evaluation (71114.06).....	27
2. RADIATION SAFETY .....	28
2RS7 Radiological Environmental Monitoring Program (71124.07) .....	28
4. OTHER ACTIVITIES.....	30
4OA1 Performance Indicator (PI) Verification (71151).....	30
4OA2 Identification and Resolution of Problems (71152) .....	33
4OA6 Management Meetings .....	40
SUPPLEMENTAL INFORMATION .....	2
KEY POINTS OF CONTACT.....	2
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED .....	2
LIST OF DOCUMENTS REVIEWED.....	3
LIST OF ACRONYMS USED .....	13

## SUMMARY OF FINDINGS

Inspection Report 05000461/2014004; 07/01/14 – 09/30/14; Clinton Power Station; Operability Determinations and Functionality Assessments, Surveillance Testing, Maintaining Emergency Preparedness, and Identification and Resolution of Problems.

This report covers a three-month period of inspection by the resident inspectors and announced baseline inspections by regional inspectors. Six Green findings, all of which had an associated non-cited violation, 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 June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects within the Cross Cutting Areas" effective date January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 5, dated February 2014.

### Cornerstone: Initiating Events

- Severity Level IV. The inspectors identified a Severity Level IV non-cited violation of 10 *Code of Federal Regulations* (CFR) 50.71(e), "Periodic Update of the Final Safety Analysis Report," and an associated Green finding for the licensee's failure to update the report with a description of the basis for the steam dryer (SD) structural integrity submitted to the NRC in support of an extended power uprate license amendment. Specifically, the licensee did not update Section 3.9.5.1.1.9, "Steam Dryers," of the Updated Safety Analysis Report (USAR) to include analysis and inspections of the steam dryer each refueling outage that provide the basis for steam dryer structural integrity. Consequently, the licensee had not completed an inspection of the steam dryer during the most recent refueling outage. The licensee entered this issue into the corrective action program (CAP) as issue report (IR) 02223135 and initiated actions to evaluate the Updated Safety Analysis Report for revision to include description of the structural integrity function of the steam dryer.

The inspectors determined that the licensee's failure to update the USAR with the basis for steam dryer structural integrity submitted to the NRC was a performance deficiency. The performance 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 would have the potential to lead to a more significant safety concern and is therefore a finding. Failure to update the Updated Safety Analysis Report with the basis for steam dryer structural integrity could result in a failure to maintain the structural integrity of the steam dryer. Specifically, insufficient steam dryer inspections could result in failure to detect structurally significant cracking and result in a steam dryer failure which generates debris that adversely affects the function of safety-related components such as the main steam isolation valves (MSIVs). Additionally, the failure to update the USAR with the basis for steam dryer structural integrity was more than minor because it was associated with the Initiating Event cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions.

Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," the finding was screened against the Initiating Events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable condition. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

In accordance with Section 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the USAR as required by 10 CFR 50.71(e) had not yet resulted in any unacceptable change to the facility or procedures. (Section 40A2.3.b.1)

- Severity Level IV. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59(d)(1), "Changes, Test, and Experiments," for the licensee's failure to perform a written evaluation, which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee made a change pursuant to 10 CFR 50.59(c) with the installation of ½ inch holes adjacent to welds attaching tie bars 28 and 30 to the steam dryer vane assembly and did not provide a basis for the determination that this change would not result in a more than a minimal increase in the likelihood of occurrence of a malfunction of a system structure or component important to safety. The licensee entered this finding into the CAP as IR 02223135 and identified an action to secure a detailed assessment of these degraded tie bar locations from the steam dryer vendor. The licensee also consulted with the steam dryer vendor and made a qualitative assessment that the additional unflawed and unaltered portion of the fillet welds present at the end of the tie bar 28 and 30 locations provided a reasonable basis to conclude that these tie bars would not fail and affect the operability of safety-related components.

The inspectors determined that the failure to provide a written evaluation, which provided the basis for the determination that a change did not require a license amendment, was a performance deficiency. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with increased likelihood of a SD failure that impacts safety-related equipment due to reduced structural support available at tie bars 28 and 30. The performance 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 it was associated with the Initiating Events cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In addition, the associated violation was determined to be more than minor because the inspectors could not reasonably determine if the changes to the SD at tie bars 28 and 30 would have required NRC prior approval.

Per IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Initiating Events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance. (Section 4OA2.3.b.2)

### **Cornerstone: Mitigating Systems**

- Green. The inspectors identified a Green finding and an associated non-cited violation of Technical Specification (TS) 3.8.4, “DC Sources – Operating” and TS 3.8.9, “Distribution Systems – Operating” for the licensee’s failure to enter the technical specifications and complete the associated actions prior to the completion time when auxiliary equipment required to support electrical power system safety function was out of service. Specifically, the licensee removed the division 1 safety-related portion of the switchgear cooling system from service to perform maintenance and failed to enter the applicable TSs that were required to support system safety function. The licensee documented this issue in the CAP as IR 01674754 and issued a night order to enter the appropriate TS if the safety-related portion of the switchgear cooling system is inoperable.

The failure to enter the TS and complete the associated actions prior to the completion time when auxiliary equipment required to support electrical power system safety function was out of service was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” Exhibit 2 for the Mitigating Systems Cornerstone, issued June 19, 2012, the inspectors performed a detailed risk evaluation since the finding represented an actual loss of function of at least a single train for greater than its TS allowed outage time. Based on the detailed risk evaluation, this finding is characterized as a finding of very low safety-significance (Green). The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of avoid complacency where individuals recognize and plan for mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, the licensee has removed the division 1 or 2 safety-related switchgear cooling system fans or condensing units from service numerous times and failed to consider the components inoperable under technical specification definition for operable [H.12]. (Section 1R15.1.b.1)

- Green. The inspectors identified a finding and an associated non-cited violation of 10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures and Drawings,” for the failure to accomplish station procedure OP-AA-108-115, “Operability Determinations” Revision 14. Specifically, on multiple occasions operations personnel failed to complete or documented incomplete operability determinations or functionality evaluations used to determine the operability or functionality of safety-related or important to safety equipment used at the site. The licensee documented this issue in the CAP as IR 01693256. Interim corrective actions included additional review by senior reactor operator to verify that operability determinations or functionality evaluations were complete.

The failure to properly document operability or functionality basis used to determine the operability or functionality of safety-related or important to safety equipment used at the site is a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected, the performance deficiency has the potential to lead to a

more significant safety concern and is therefore a finding. Specifically, if operations personnel continue to fail to properly document operability or functionality basis, the licensee could have safety-related equipment inoperable or important to safety equipment unavailable without taking appropriate compensatory actions. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Mitigating Systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of training, where the organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, personnel performing the reviews believed existing training provided sufficient knowledge without the use of additional resources material and current training to operators does not cover this activity [H.9]. (Section 1R15.1.b.2)

- Green. The inspectors identified a Green finding and an associated non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the failure to establish a surveillance procedure to test the Reactor Core Isolation Cooling (RCIC) system without unacceptable preconditioning. Specifically, procedure CPS 9054.01C002, "RCIC High Pressure Operability Checks," Revision 8, allows draining of the RCIC exhaust drain pot prior to the surveillance run. This action constitutes unacceptable preconditioning because it could make it difficult to determine whether the system would perform its intended function during an event in which the system might be needed. The licensee documented this issue in the CAP as IR 02386704 and made changes to the procedure to ensure inadequate preconditioning does not occur.

The inspectors determined that the failure to establish a surveillance procedure to test the RCIC system without unacceptable preconditioning is a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to respond to initiating events to prevent undesirable consequences and is therefore a finding. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Mitigating Systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of problem identification and resolution in the aspect of operating experience where the



organization systematically and effectively collects, evaluates and implements relevant internal and external operating experience in a timely manner. Specifically, the licensee considered the impact of the operating experience for surveillance testing, but did not consider its impact during normal plant operation [P.5]. (Section 1R22.1.b)

### **Cornerstone: Emergency Preparedness**

- Green. The inspectors identified a Green finding and an associated non-cited violation of 10 CFR 50.54(q)(2) for failing to maintain the effectiveness of the Clinton Power Station (CPS) Emergency Plan. Specifically, the licensee failed to provide the station evacuation time estimates (ETE) to responsible offsite response organizations (OROs) and failed to update their site-specific protective action strategies as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 of Appendix E to 10 CFR Part 50. The licensee entered this issue in the CAP as IR 01690631 and revised the ETE analysis.

The inspectors determined that Exelon's failure to submit a complete updated ETE for the CPS by December 22, 2012 was a performance deficiency. Specifically, the ETE is an input into the development of protective action strategies prior to an accident and to the protective action recommendation decision making process during an accident. Inadequate ETEs have the potential to reduce the effectiveness of public protective actions implemented by the OROs. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the emergency preparedness (EP) cornerstone and adversely affected the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency and is therefore a finding. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix B, "Emergency Preparedness Significance Determination Process (SDP)," the finding was screened by the inspectors and determined to be of very low safety significance (Green) based upon the following. The performance deficiency was associated with planning standard 10 CFR 50.47(b)(10). Table 5.10-1, "Significance Examples 10 CFR 50.47(b)(10)," Green Finding column, provides the following examples "ETEs and updates to the ETEs were not provided to responsible OROs," and "The current public protective action strategies documented in emergency preparedness implementing procedures (EPIPs) are not consistent with the current ETE." The inspectors concluded that the incomplete updated ETE delayed the NRC's approval of the CPS ETE, therefore the ETE was not provided to the site OROs nor was it used to inform the site EPIPs as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 of Appendix E to 10 CFR Part 50. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of documentation where the organization creates and maintains complete, accurate and up-to-date documentation. Specifically, the EP organization did not develop the CPS ETE as required by the new regulation introduced by the NRC's EP Rule [H.7]. (Section 1EP5.2.b)

## REPORT DETAILS

### Summary of Plant Status

Clinton Power Station, Unit 1 was operated at or near 98 percent power during the inspection period with the following exceptions:

- On September 7, 2014, control room operators reduced power to approximately 73 percent to perform control rod sequence exchanges, and perform surveillances on main steam isolation valves (MSIVs), turbine stop valves/combined intermediate valves, and turbine control valves. The unit returned to full power the same day.

### **1. REACTOR SAFETY**

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

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

##### .1 External Flooding

##### a. Inspection Scope

The inspectors reviewed flood protection barriers and procedures for coping with external flooding at the plant. Clinton Power Station has limited susceptibility to external flooding as described in Section 3.4.1.1 of the USAR and Section 5.2 of the Individual Plant Examination for External Events Report. The inspectors reviewed CPS 4303.02, "Abnormal Lake Level," Revision 12a, to assess the adequacy of the licensee response to external flooding conditions.

The inspectors conducted a walkdown of the lake screen house, including the shutdown service water pump rooms. The inspectors assessed the condition of water tight door seals; the sealing of equipment floor plugs, electrical conduits, holes or penetrations in floors and walls between the pump rooms; and the condition of room floor drains, sumps, and sump pumps. The inspectors also conducted a walkdown of the Lake Clinton dam to assess compliance with Regulatory Guide 1.127.

Additionally, the inspectors verified that external flooding protection issues were entered into the licensee's CAP with the appropriate characterization and significance. Selected IRs were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted one external flooding sample as defined in inspection procedure (IP) 71111.01-04.

##### b. Findings

No findings were identified.

## 1R04 Equipment Alignment (71111.04Q)

### .1 Quarterly Partial System Walkdowns

#### a. Inspection Scope

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

- Division 2 emergency diesel generator air starting train "B" with air starting train "A" out of service for maintenance
- Fuel pool cooling train "A" during fuel pool cooling train "B" system outage for maintenance
- Fire pump "B" during the fire pump "A" system outage for maintenance

The inspectors selected these systems based on their risk significance relative to the Reactor Safety cornerstones. The inspectors reviewed operating procedures, system diagrams, TS requirements, and the impact of ongoing work activities on redundant trains of equipment. The inspectors verified that conditions did not exist 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 were aligned correctly and available as necessary.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's CAP with the appropriate characterization and significance. Selected IRs were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

These activities constituted three partial system walkdown samples as defined in IP 71111.04-01.

#### b. Findings

No findings were identified.

### .2 Semi-Annual Complete System Walkdown

#### a. Inspection Scope

On September 21, 2014, the inspectors completed a complete system alignment inspection of the high pressure core spray system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors

reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire zone M-4, fire pump “A” room – elevation 699’
- Fire zone M-1, division 1 shutdown service water pump room – elevation 699’
- Fire zone M-2b, division 2 shutdown service water pump room – elevation 699’
- Fire zone M-2a, division 3 shutdown service water pump room – elevation 699’

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.

These activities constituted four quarterly fire protection inspection samples as defined in IP 71111.05-05.

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 July 23, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and 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

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 September 7, 2014, the inspectors observed the operating crew down power to 73 percent power for rod sequencing exchanges; the performance of surveillances on MSIVs, turbine stop valves/combined intermediate valves, and turbine control valves. 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; and
- oversight and direction from supervisors.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements.

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Diesel generator heating, ventilation and air conditioning system
- Division 1 nuclear system protection system
- Emergency reserve auxiliary transformer

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.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- Planned work activities in the switchyard
- Emergent work activity associated with replacing a residual heat removal system load driver card
- Planned work activities the week of August 3 – August 9 yellow risk due to maintenance on train “B” fuel pool cooling system outage
- Planned work activities the week of August 25 – August 29 yellow risk due to maintenance activities on train “A” standby gas treatment system outage
- Planned work activities the week of September 1 – September 5 yellow risk due to maintenance on division 1 direct current bus system outage
- Planned work activities the week of September 22 – September 26 yellow risk due to maintenance on division 1 emergency diesel generator and division 1 shutdown service water system outages

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.

These maintenance risk assessments and emergent work control activities constituted six 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:

- Division 1 switchgear with associated division 1 switchgear safety-related portion of the room cooler out of service;
- Low pressure core spray minimum flow line vibrations during surveillance testing;
- Reactor core isolation cooling surveillance drains exhaust pot prior to commencing surveillance test;
- Mixing compressor room fan 1VR08C failure to run; and
- Primary and back up meteorological towers have excessive foliage in the vicinity of the towers.

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.

In addition, the inspectors verified that problems related to the operability or functionality of safety-related plant equipment was entered into the licensee's CAP with the appropriate characterization and significance. Selected IRs were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

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

b. Findings

(1) Technical Specification Allowed Outage Time Exceeded for Electrical Power Systems Due to Auxiliary Equipment Out of Service

Introduction. The inspectors identified a Green finding and an associated NCV of TS 3.8.4, "DC Sources – Operating" and TS 3.8.9, "Distribution Systems – Operating" for failure to enter the TSs and complete the associated actions prior to the completion time when auxiliary equipment required to support electrical power system safety function was out of service. Specifically, the licensee removed the division 1 safety-related portion of the switchgear cooling system from service to perform maintenance and failed to enter the applicable TS conditions.

Description. On June 24, 2014 during periodic review of ongoing work at the site, the inspectors noted that work had commenced on June 22, 2014 at 2015 on the safety-related portion of the division 1 switchgear cooling system placing the system out of service. The inspectors questioned the control room staff on which applicable TS conditions had been entered with the equipment out of service and were told that no TSs had been entered but the licensee had entered Operational Requirement 2.4.9 in their operational requirements manual (ORM) that provided requirements for the system being out of service.



After reviewing the ORM, the inspectors then asked the control room staff if the division 1 switchgear was currently operable with the safety-related portion of the switchgear cooling system out of service. The control room staff stated that the ORM was being met and therefore the switchgear was operable. The inspectors determined that the division 1 switchgear did not meet the definition of operable as defined in the TS with the safety-related portion of the switchgear cooling system out of service. The licensee entered the inspectors' question into the CAP as IR 01674754.

The licensee performed an apparent cause investigation and determined that after implementing the Improved Technical Specifications in 1995, TS bases were revised to state that it was acceptable and conservative to declare a shutdown service water subsystem inoperable when a branch connection is isolated or when a supported ventilation system is inoperable. The shutdown service water system provides cooling to the switchgear ventilation system. In 2001, the licensee implemented procedural requirements to allow shutdown service water outage time to be up to 14 days without declaring divisional equipment inoperable if the redundant subsystem was in service and the safety-related chillers on the other divisions were in service. If the safety-related portion of the systems became inoperable, the licensee would enter the shutdown service water TS and apply LCO 3.0.6.

The station assumed that the requirements of TS Limiting Condition for Operation (LCO) 3.0.6 were applicable to the switchgear cooling system. This LCO states that "When a supported system LCO is not met solely due to a support system LCO not being met, the condition and required actions associated with this supported system are not required to be entered. Only the support system LCO actions are required to be entered". Although the switchgear cooling system has its own ORM requirements, the inspectors determined the switchgear cooling does not have its own LCO and action statements. Therefore the system is not a supported system and LCO 3.0.6 does not apply.

In 2005, a revision was made to the ORM that would allow taking the safety-related portions of the switchgear cooling system out of service indefinitely without entering any TS if certain temperature requirements were met. However, an analysis to support this change could not be identified.

Concurrent with the licensee review, both the inspectors and the licensee identified a letter from the NRC to CPS from August 1989 that provided the NRC's position. The letter stated that the switchgear cooling system had to be addressed for the operability of electrical systems.

The licensee documented this issue in the CAP as IR 01683023 and issued a night order to enter the appropriate TS if the safety-related portion of the switchgear cooling system is inoperable.

Analysis. The failure to enter the TS and complete the associated actions prior to exceeding the TS completion time when auxiliary equipment required to support electrical power system safety function was out of service was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is

therefore a finding. Using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, Exhibit 2 for the Mitigating Systems Cornerstone, a detailed risk evaluation was performed since the finding represented an actual loss of function of at least a single Train for greater than its TS allowed outage time.

The SRAs evaluated the finding using the Clinton Standardized Plant Analysis Risk (SPAR) model version 8.17, Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) version 8.1.0. For switchgear cooling, independent redundant cooling trains are provided for each of the three divisional switchgear areas with one train being nonsafety-related and the other safety-related. In order to characterize the risk significance, the SRAs assumed that during a loss of offsite power (LOOP) event, the nonsafety-related switchgear cooling train that is normally in operation would become unavailable. The safety-related cooling train, should it be undergoing maintenance, would be unavailable as well. The exposure time for this issue was taken to be 235 hours based on licensee documentation. Post-processing rules were used to credit an additional 4.0 hours of time to recover offsite power in core damage sequences. This is performed to allow recovery of the nonsafety-related cooling train when the safety-related cooling train for division 1 equipment was undergoing maintenance during a LOOP. The SRAs also gave credit in the SPAR Model for local operator action to provide alternate switchgear room cooling during a LOOP. The licensee produced Alarm Response Procedure CPS 5050.03, Revision 30c, which directed operators to Procedure CPS 3412.01, "Essential Switchgear Heat Removal (VX)," Revision 15. These procedures directed operators to locally open doors, set up portable blowers, or lower electrical loads to help cool the room as necessary. The SRAs used the SPAR-H Human Reliability Analysis Method (NUREG/CR-6883) to estimate the human error probability for identifying and executing the local actions. The performance drivers were "time" (extra time) and "stress" (high) for diagnosis. The performance drivers were "stress" (high) and "ergonomics" (poor) for action. The resultant human error probability using these assumptions was 0.022.

Using the above information, the incremental core damage frequency ( $\Delta$ CDF) during the exposure time is 1.7E-08/yr. The dominant sequences were station blackout sequences, with initial success of RCIC and high pressure core spray systems, but later failure of those systems and decay heat removal and all injection due to failure to vent containment and its subsequent failure. Based on the detailed risk evaluation, this finding is best characterized as a finding of very low safety-significance (Green). The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of avoid complacency where individuals recognize and plan for mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, the licensee has removed the division 1 or 2 safety-related switchgear cooling system fans or condensing units from service on this and other times and failed to consider the components inoperable under the TS definition for operability [H.12].

Enforcement. CPS TS 3.8.4, "DC Sources – Operating," requires, in part, that division 1 DC electrical power subsystem shall be operable in modes 1, 2 and 3. Technical Specification 3.8.9, "Distribution Systems – Operating," requires, in part, that division 1 AC, DC and uninterruptible AC bus electrical power distribution subsystems shall be operable in modes 1, 2 and 3. Technical Specification 3.8.4 requires that if the division 1 DC electrical power subsystem is inoperable for more than two hours, action must be

taken to place the unit in mode 3 within 12 hours. Technical Specification 3.8.9 requires that if the division 1 AC or uninterruptable AC bus electrical power distribution subsystem is inoperable for more than eight hours or the division 1 DC electrical power distribution subsystem is inoperable for more than two hours, action must be taken to place the unit in mode 3 within 12 hours. Contrary to the above, on June 22, 2014 at 2015, the division 1 safety-related portion of the switchgear cooling system was removed from service and was not returned to service until June 25, 2014 at 1200. During this time, the licensee did not enter the required TSs and exceeded the allowed completion times for the required TS actions. The licensee entered this issue into its CAP and issued a standing order to ensure that the appropriate TSs are entered if the safety-related portion of the switchgear cooling system is taking out of service. Because the violation was of very low safety significance and was entered into the licensee's CAP, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement policy. **(NCV 05000461/2014004-01, Technical Specification Allowed Outage Time Exceeded for Electrical Power Systems Due to Auxiliary Equipment Out of Service)**

(2) Programmatic Failure to Complete Operability and Functionality Determinations

Introduction. The inspectors identified a Green finding and an associated NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the failure to accomplish procedure OP-AA-108-115, "Operability Determinations," Revision 14. Specifically, on multiple occasions, operations personnel failed to properly document operability and functionality basis used to determine the operability or functionality of safety-related or important to safety equipment used at the site.

Description. On December 6, 2013, the inspectors reviewed an operability determination performed for a low pressure core spray discharge header pressure high annunciator received in the control room. The issue was documented on IR 01592687. During the review, the inspectors determined the operability determination was incomplete because the evaluation only considered operability of the piping and not the operability of the valve that was the source of leakage causing the over pressurization. This deficiency was documented in IR 01593809 and actions were taken to complete the original operability determination.

On February 13, 2014, the inspectors reviewed an operability determination performed for a shutdown header pressure high annunciator received in the control room. The issue and the operability determination were documented in IR 01620607. During the review, the inspectors determined the operability determination was incomplete because the evaluation only considered leakage past the valve and not the impact to overall containment integrity. This deficiency was documented in IR 01623312 and actions were taken to the complete the original operability determination.

On July 22, 2014, the inspectors reviewed IR 01673243 that described a potential degraded condition with the site primary and backup meteorological monitoring towers. During the review, the inspectors determined that a required functionality assessment had not been performed for the meteorological monitoring towers in accordance with the station operability determination process.

On September 12, 2014, the inspectors reviewed IR 01578969, IR 01631144, and IR 01684967 that described drywell fan 1VR08C not automatically starting and running when required. During the review, the inspectors determined that the mixing compressor was declared operable based on the incorrect assumption that the fan was only required for cooling and that adequate cooling existed without fan operation. However, the fan is also required to prevent hydrogen stratification in the room and therefore the mixing compressor should have been declared inoperable.

The inspectors reviewed IR 01693256, documenting cyclic performance in operability/functionality reviews by on-shift operations personnel and its associated apparent cause investigation relating to 10 more licensee identified operability/functionality issues documented in the licensee's CAP since January 1, 2014. The evaluation concluded that the causes included: (1) IR shift reviews were being conducted without the use of available resource material and (2) a lack of proficiency of operations personnel.

Based on multiple examples of failures to properly document operability and functionality basis used to determine the operability or functionality of safety-related or important to safety equipment used at the site, the inspectors determined that the failures were of routine nature and were indicative of a programmatic failure to complete evaluations as required per the station's operability determination process.

The licensee entered this issue into the CAP as IR 01693256. Interim corrective actions included additional review by senior reactor operator to verify that operability determinations or functionality evaluations were completed.

Analysis. The failure to properly document operability and functionality basis used to determine the operability or functionality of safety-related or important to safety equipment used at the site is a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected, the issue has the potential to lead to a more significant safety concern and is therefore a finding. Specifically, if operations personnel continue to fail to properly document operability or functionality basis, the licensee could have safety-related equipment inoperable or important to safety equipment unavailable without taking appropriate compensatory actions (i.e. entering appropriate TS LCOs). Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Mitigating Systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event.

The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of training, where the organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, personnel performing the

reviews believed existing training provided sufficient knowledge without the use of additional resources material and current training to operators does not cover this activity [H.9].

Enforcement. 10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures and Drawings,” requires in part, that activities affecting quality shall be accomplished in accordance with instructions, procedures or drawings and appropriate to the circumstance. Clinton Power Station procedure OP-AA-108-115, “Operability Determinations”, Revision 14, Step 4.1.4 states that “Determine and document the operability status of the affected structure, system or component in accordance with the CAP” and Step 4.1.7 states “Document the operability determination results on the issue report.” Additionally Step 4.1.20 states that “Determine and document the functional/functionality status of the affected structure, system or component in accordance with the CAP” and Step 4.1.23 states that “Document the functionality determination results on the issue report.” Contrary to the above, on December 6, 2013, February 13, 2014, July 22, 2014 and September 12, 2014, the licensee failed to determine and document the operability or functionality status of the affected structures, systems or component and failed to document the operability or functionality determination results. The licensee entered this issue into the CAP as IR 01693256. Interim corrective actions included additional review by senior reactor operator to verify that operability determinations or functionality evaluations were completed. Because this violation is of very low safety significance and was entered into the CAP, this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000461/2014004-02, Programmatic Failure to Complete Operability and Functionality Determinations)**

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modifications:

- Fire protection printer – permanent modification per Engineering Change 398188
- Average power range monitor upscale rod block card – temporary modification per Engineering Change 398759

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance.

This inspection constituted one temporary modification sample and one permanent plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- Fire pump "A" post maintenance test after system maintenance;
- Main steam line pressure differential transmitter 1E31N086A after replacement;
- Residual heat removal load driver card replacement post maintenance test;
- Fuel pool cooling filter bypass valve 1FC004B testing after modifications;
- Residual heat removal pump 1A room water level switch 1LSCM279 post maintenance testing after switch replacement;
- High pressure core spray line to reactor vessel differential pressure transmitter replacement post maintenance test; and
- Residual heat removal pump 1A minimum flow valve thrust verification and thermal overload testing.

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 seven 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:

- CPS 9981.01, "Diesel Fuel Oil Sampling and Analysis" (Routine Test);
- CPS 9069.01, "Shutdown Service Water Operability Test Division 2" (In-Service Test);
- CPS 9052.01, "Low Pressure Core Spray Operability Run" (In-Service Test);
- CPS 9054.01, "Reactor Core Isolation Cooling High Pressure Operability Test" (In-Service Test); and
- CPS 9015.01, "Standby Liquid Control System Operability" (In-Service 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 set points 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 in-service 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.

This inspection constituted one routine surveillance testing sample, four in-service testing samples, as defined in IP 71111.22, Sections -02 and -05.

b. Findings

Failure to Establish a Surveillance Procedure for Reactor Core Isolation Cooling Pump without Unacceptable Preconditioning

Introduction. The inspectors identified a Green finding and an associated NCV of TS 5.4.1.a, "Procedures," for the failure to establish a surveillance procedure to test the RCIC system without unacceptable preconditioning. Specifically, procedure CPS 9054.01C002, "RCIC High Pressure Operability Checks," Revision 8, allows draining of the RCIC exhaust drain pot prior to the surveillance run. This action constitutes an unacceptable preconditioning because it could make it difficult to determine whether the system would perform its intended function during an event when required.

Description. On July 29, 2014, during the performance of the high pressure operability check surveillance on the RCIC system, the inspectors noted that procedure CPS 9054.01C002, "RCIC High Pressure Operability Checks," Step 8.4.4, instructed the operators to drain the RCIC exhaust drain pot prior to starting the pump. The licensee drained the component prior to pump run in response to operating experience from Quad Cities and LaSalle, documented in Information Notice 93-67: "Bursting of High Pressure Coolant Injection Steam Line Rupture Discs Injures Plant Personnel" as well as in a GE Nuclear Services Information Letter. This operating experience cautioned the licensee of the consequences of excessive water in the steam exhaust line. Excessive water could cause pressure to build up and rupture a protective disc installed in the piping to protect the piping integrity. If the disc ruptures, the pump would become inoperable.

The licensee had a level switch that would alarm in the control room if the water in the drain pot rises above a certain level and would open a drain valve to allow the accumulated water to drain. This would prevent a pressure build up and damage to the piping. Maintenance was performed on this switch on a 10-year interval. The inspectors determined that if the switch were to fail low, there would be no indication in the control room or elsewhere that would alert operators that the switch had failed. Additionally, the inspectors noted that the surveillance procedure did not verify the functionality of the switch nor did it quantify the amount of liquid removed to ensure it would not have an adverse effect on the RCIC turbine operation. These items could call into question the operability of the RCIC pump.

Inspection Manual Technical Guidance Part 9900 defines unacceptable preconditioning, in part, as "The alteration, variation, manipulation, or adjustment of the physical condition of an SSC before or during TS surveillance or ASME Code testing that will alter one or



more of an SSC's operational parameters, which results in acceptable test results. Such changes could mask the actual as-found condition of the SSC and possibly result in an inability to verify the operability of the SSC. In addition, unacceptable preconditioning could make it difficult to determine whether the SSC would perform its intended function during an event in which the SSC might be needed."

Inspection Manual Technical Guidance Part 9900 further describes that some types of preconditioning may be considered acceptable, "provided that it does not remove a pre-existing adverse condition without proper identification and evaluation." The inspectors determined that the licensee failed to identify and evaluate the draining of the exhaust drain pot as acceptable preconditioning and therefore it is unacceptable. It further states that "draining turbine steam lines directly preceding surveillance testing without proper controls is unacceptable preconditioning." Since the licensee did not establish any controls, or other methods to evaluate the as-found condition prior to draining the lines, the inspectors concluded that draining the RCIC exhaust drain pot, prior to the surveillance constituted unacceptable preconditioning.

Additionally, the inspectors determined that the unacceptable preconditioning was not in accordance with the licensee's procedural guidance as specified in procedure ER-AA-321, "Administrative Requirements for Inservice Testing," Revision 12. Section 4.10.1, Preconditioning, states in part, "That preconditioning is the alteration, variation, manipulation, or adjustment of the physical condition of a component before testing. Preconditioning may or may not be acceptable. Activities performed prior to testing may mask component degradation." Procedure ER-AA-321-1007, "Inservice Testing Program Corporate Technical Positions," Revision 1, also provides additional guidance for unacceptable preconditioning.

The licensee documented this issue in the CAP as IR 02386704 and made changes to the procedure to ensure inadequate preconditioning does not occur.

Analysis. The inspectors determined that the failure to establish a surveillance procedure to test the RCIC system without unacceptable preconditioning is a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to respond to initiating events to prevent undesirable consequences and is therefore a finding.

Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Mitigating Systems cornerstone criteria. The finding was determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of problem identification and resolution in the aspect of operating experience where the organization systematically and effectively

collects, evaluates and implements relevant internal and external operating experience in a timely manner. Specifically, the licensee considered the impact of the operating experience for surveillance testing, but did not consider its impact during normal plant operation [P.5].

Enforcement. Technical Specification 5.4.1.a requires that written procedures be established, implemented and maintained covering activities described in Regulatory Guide 1.33, Revision 2, Appendix A, which includes surveillance procedures. Contrary to the above, on July 29, 2014, the licensee failed to establish a procedure that ensured the RCIC pump surveillance run was not preconditioned in an unacceptable manner. The licensee documented this issue in the CAP as IR 02386704 and made changes to the procedure to ensure inadequate preconditioning does not occur. Because the violation was of very low safety significance and it was entered into the licensee's CAP, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000461/2014004-03, Failure to Establish a Surveillance Procedure for Reactor Core Isolation Cooling Pump Due to Unacceptable Preconditioning)**

**Cornerstone: Emergency Preparedness**

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors held discussions with EP staff regarding the operation, maintenance, and periodic testing of the primary and backup Alert and Notification System (ANS) in the plume pathway emergency planning zone. The inspectors reviewed monthly trend reports and siren test failure records from September 2012 through June 2014. Information gathered during document reviews and interviews were used to determine whether the ANS equipment was maintained and tested in accordance with emergency plan commitments and procedures.

This ANS evaluation inspection constituted one sample as defined in IP 71114.02-06.

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) on-shift and augmentation staffing levels. A sample of 11 ERO training records for personnel assigned to key and support positions were reviewed to determine the status of their

training as it related to their assigned ERO positions. The inspectors reviewed the ERO Augmentation System and activation process, the primary and alternate methods of initiating ERO activation, unannounced off-hour augmentation tests from September 2012 through June 2014, and the provisions for maintaining the plant's ERO roster.

The inspectors reviewed a sample of corrective actions related to the facility's ERO staffing and augmentation system program and activities from September 2012 through June 2014 to determine whether corrective actions were completed in accordance with the site's CAP.

This ERO staffing and augmentation system inspection constituted one sample as defined in IP 71114.03-06.

b. Findings

No findings were identified.

1EP4 Emergency Action and Emergency Plan Changes (71114.04)

.1 Emergency Action and Emergency Plan Changes

a. Inspection Scope

The Nuclear Security and Incident Response headquarters staff performed an in-office review of the latest revision to the Evacuation Time Estimate (ETE) analysis for Clinton Power Station, Unit 1 (ADAMS Accession Number ML14141A046). This revision was submitted to the NRC on May 2, 2014 and was part of the corrective actions to the NCV 05000461/2014004-04 listed in Section 1EP5 below.

The staff performed a review using the guidance provided in NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies." The updated evacuation time estimate was found to be complete in accordance with 10 CFR Part 50, Appendix E.IV.3. The NRC review was only intended to verify consistent application of the evacuation time estimate guidance contained in NUREG/CR-7002; and therefore, the analysis remains subject to future NRC inspection in its entirety.

This emergency plan review inspection constituted one sample as defined in IP 71114.04-06

b. Findings

No findings were identified.

1EP5 Maintaining Emergency Preparedness (71114.05)

.1 Maintaining 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 10 CFR 50.54(t). The inspectors also reviewed critique reports and samples of CAP records associated with the 2013 biennial exercise, as well as various EP drills conducted, in order to determine that the licensee fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities. The inspectors reviewed a sample of EP items and corrective actions related to the facility's EP Program and activities from September 2012 through June 2014 to determine whether corrective actions were completed in accordance with the site's CAP.

This correction of EP weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05-06.

b. Findings

No findings were identified.

.2 Maintaining Emergency Preparedness

a. Inspection Scope

Nuclear Regulatory Commission EP rulemaking, which became effective on December 23, 2011, added a new regulation that required a licensee to develop an ETE analysis and submit it to the NRC by December 22, 2012. This inspection was a follow-up of issues identified by the NRC headquarter staff during its review of the Exelon submittal of the ETE for the ten sites that it operates. The NRC staff related those issues to Exelon, which provided responses through 2013 and into 2014. During this inspection period, regional Emergency Preparedness inspectors reviewed applicable licensee documents, conducted discussions with licensee personnel, and provided assessment of the Exelon response.

This EP inspection constituted no samples as defined in IP 71114.05-06.

b. Findings

Incomplete Evacuation Time Estimate Submittals

Introduction. The inspectors identified a finding and an associated Green NCV of 10 CFR 50.54(q)(2) for failing to maintain the effectiveness of the CPS emergency plan. Specifically, the licensee failed to provide the station ETE to responsible OROs and failed to update their site-specific protective action strategies as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 of Appendix E to 10 CFR Part 50.

Description. The NRC issued final new and amended EP regulations on November 23, 2011 (76 Federal Register 72560). This rulemaking, which became effective on December 23, 2011, amended 10 CFR 50.47(b)(10) to require licensees to update the ETE on a periodic basis. The rulemaking also added a new regulation, 10 CFR Part 50, Appendix E, Section IV.4, which requires a licensee to develop an ETE analysis using the most recent decennial census data and submit it to the NRC within 365 days of December 23, 2011. Concurrently with the issuance of the rulemaking, the NRC published a new report, NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies." The Statements of Consideration for the rulemaking (76 Federal Register 72580) identified that the NRC would review the submitted ETEs for completeness using NUREG/CR-7002. The statements also provided that the NUREG/CR-7002 guidance was an acceptable template to meet the requirements and that licensee should use the guidance or an appropriate alternative.

By individual letters dated December 12, 2012, Exelon submitted the ETEs for the sites for which it holds the operating licenses, including CPS. By a letter dated January 23, 2013, Exelon submitted the NUREG/CR-7002 checklists for these ETEs. These checklists identified where a particular criterion was addressed in the ETEs, facilitating the NRC review.

As provided in the Statements of Consideration, the NRC performed a completeness review using the checklists and found the ETEs, including that for CPS, to be incomplete due to common and site-specific deficiencies. The NRC discussed its concerns regarding the completeness of the ETEs, in a teleconference with Exelon on June 10, 2013. By letter dated September 5, 2013, Exelon resubmitted the ETEs and the associated checklists for its sites. The NRC performed another completeness review and again found the ETEs to be incomplete. Examples of information missing from the submittal included: 1) peak and average attendance were not stated (NUREG/CR-7002 Criteria Item 2.1.2.a); 2) the ETE used a value based on campsite and hotel capacity, vice an average value (2.1.2.b); 3) basis for speed and capacity reduction factors due to weather was not provided (3.4.b); 4) snow removal was not addressed (3.4.c); 5) no bus routes or plans were included in the ETE analysis (4.1.2.a); and, 6) no discussion on the means of evacuating ambulatory and non-ambulatory residents was included (4.1.2.b).

Exelon entered this issue into their CAP as IR 1525923 and IR 1578649. Exelon submitted a third ETE for CPS on May 2, 2014, and the NRC's review of that ETE was found complete and documented in Section 1EP4 of this report.

Analysis. The inspectors determined that Exelon's failure to submit a complete updated ETE for CPS by December 22, 2012 was a performance deficiency. Specifically, the ETE is an input into the development of protective action strategies prior to an accident and to the protective action recommendation decision making process during an accident. Inadequate ETEs have the potential to reduce the effectiveness of public protective actions implemented by the OROs. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency and is therefore a finding. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix B, "EP Significance Determination Process (SDP)," the finding was screened by the inspectors and determined to be of very low safety significance (Green) based

upon the following. The performance deficiency was associated with planning standard 10 CFR 50.47(b)(10). Table 5.10-1, "Significance Examples 10 CFR 50.47(b)(10)," Green Finding column, provides the following examples: "ETEs and updates to the ETEs were not provided to responsible OROs," and "The current public protective action strategies documented in EIPs are not consistent with the current ETE." The inspectors concluded that the incomplete updated ETE delayed the NRC's approval of the CPS ETE. Therefore the ETE was not provided to the site OROs nor was it used to inform the site EIPs as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 of Appendix E to 10 CFR Part 50.

The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of documentation where the organization creates and maintains complete, accurate and up-to-date documentation. Specifically, the EP organization did not develop the CPS ETE as required by the new regulation introduced by the NRC's EP rule [H.7].

Enforcement. 10 CFR 50.54(q)(2) state, in part, that a licensee shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E to this part and the planning standards of 10 CFR 50.47(b). 10 CFR 50.47(b)(10), requires, in part, that licensees shall develop an evacuation time estimate and update it on a periodic basis. 10 CFR Part 50 Appendix E, Section IV.4, states that within 365 days of December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis and submit it under 10 CFR 50.4. Contrary to the above, the licensee failed to develop a complete and adequate ETE analysis and submit it under 10 CFR 50.4 within 365 days of December 23, 2011. Immediate corrective actions taken by Exelon included entering this issue into their CAP and revising the ETE to satisfy NRC requirements. Because this violation was of very low safety significance and was entered into the licensee's CAP as IR 01690631, this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000461/2014004-04, Incomplete Evacuation Time Estimate Submittals)**

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on September 16, 2014, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This EP drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Public Radiation Safety**

2RS7 Radiological Environmental Monitoring Program (71124.07)

This inspection constituted one complete sample as defined in IP 71124.07-05.

Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the annual radiological environmental operating reports and the results of any licensee assessments since the last inspection to assess whether the radiological environmental monitoring program (REMP) was implemented in accordance with the TS and offsite dose calculation manual (ODCM). This review included reported changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the ODCM to identify locations of environmental monitoring stations.

The inspectors reviewed the USAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audit results of the program to assist in choosing inspection “smart samples.” The inspectors also reviewed audits and technical evaluations performed on the vendor laboratory if used.

The inspectors reviewed the annual effluent release report and the 10 CFR Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste,” report, to determine if the licensee was sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

b. Findings

No findings were identified.

Site Inspection (02.02)

a. Inspection Scope

The inspectors walked down select air sampling stations and dosimeter monitoring stations to determine whether they were located as described in the ODCMI and to determine the equipment material condition. Consistent with smart sampling, the air sampling stations were selected based on the locations with the highest X/Q, D/Q wind

sectors, and dosimeters were selected based on the most risk-significant locations (e.g., those that have the highest potential for public dose impact).

For the air samplers and dosimeters selected, the inspectors reviewed the calibration and maintenance records to evaluate whether they demonstrated adequate operability of these components. Additionally, the review included the calibration and maintenance records of select composite water samplers.

The inspectors assessed whether the licensee initiated sampling of other appropriate media upon loss of a required sampling station.

The inspectors observed the collection and preparation of environmental samples from different environmental media (e.g., ground and surface water, milk, vegetation, sediment, and soil) as available to determine if environmental sampling was representative of the release pathways as specified in the ODCM and if sampling techniques were in accordance with procedures.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the USAR, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and licensee procedures. The inspectors assessed whether the meteorological data readout and recording instruments in the control room and, if applicable, at the tower were operable.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the annual environmental monitoring report. The inspectors selected events that involved a missed sample, inoperable sampler, lost dosimeter, or anomalous measurement to determine if the licensee had identified the cause and had implemented corrective actions. The inspectors reviewed the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection) and reviewed the associated radioactive effluent release data that was the source of the released material.

The inspectors selected structures, systems, or components that involve or could reasonably involve licensed material for which there is a credible mechanism for licensed material to reach ground water, and assessed whether the licensee had implemented a sampling and monitoring program sufficient to detect leakage of these structures, systems, or components to ground water.

The inspectors evaluated whether records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection were retained in a retrievable manner.

The inspectors reviewed any significant changes made by the licensee to the ODCM as the result of changes to the land census, long-term meteorological conditions (3-year average), or modifications to the sampler stations since the last inspection. They reviewed technical justifications for any changed sampling locations to evaluate whether the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.



The inspectors assessed whether the appropriate detection sensitivities with respect to TS/ODCM were used for counting samples (i.e., the samples meet the TS/ODCM required lower limits of detection). The licensee uses a vendor laboratory to analyze the REMP samples so the inspectors reviewed the results of the vendor's quality control program, including the inter-laboratory comparison, to assess the adequacy of the vendor's program.

The inspectors reviewed the results of the licensee's inter-laboratory comparison program to evaluate the adequacy of environmental sample analyses performed by the licensee. The inspectors assessed whether the inter-laboratory comparison test included the media/nuclide mix appropriate for the facility. If applicable, the inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the REMP.

b. Findings

No findings were identified.

.3 Identification and Resolution of Problems (02.03)

a. Inspection Scope

The inspectors assessed whether problems associated with the REMP were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. Additionally, the inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved the REMP.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

**Cornerstones: Emergency Preparedness, Public Radiation Safety, and Occupational Radiation Safety**

4OA1 Performance Indicator (PI) Verification (71151)

.1 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the drill/exercise performance PI for the period from the second quarter 2013 through the first quarter 2014. Performance Indicator 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 including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions, performance during the 2013

Biennial Exercise, and performance during other drills associated with the PI to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR 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 constitutes one drill/exercise performance PI sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Emergency Response Organization Readiness

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO readiness PI for the period from the first quarter 2013 through the first quarter 2014. The inspectors used PI definitions and guidance contained in NEI Document 99 02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2013 Biennial Exercise and other drills; and revisions of the roster of personnel assigned to key ERO positions to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems were identified with the PI data collected or transmitted for this indicator and none were identified.

This inspection constituted one ERO readiness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the first quarter 2013 through the first quarter 2014. The inspectors used PI definitions and guidance contained NEI Document 99 02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's records and processes including procedural guidance on assessing opportunities for the PI and results of periodic ANS operability tests to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine whether any problems had been identified with the PI data collected or transmitted for this indicator and none were identified.

This inspection constitutes one ANS sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Reactor Coolant System-Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system-specific activity PI for CPS, for the period from the fourth quarter 2013 through the second quarter 2014. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's reactor coolant system chemistry samples, TS requirements, IRs, event reports and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample.

This inspection constituted one reactor coolant system specific activity sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the occupational exposure control effectiveness PI for the period from the fourth quarter 2013 through the second quarter 2014. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if the indicator-related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational exposure control effectiveness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.6 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the radiological effluent TS/ODCM radiological effluent occurrences PI for the period from the fourth quarter 2013 through the second quarter 2014. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's IR database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one Radiological Effluent TS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

40A2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

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 and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Follow Up Inspection: Evaluation of Steam Dryer (SD) Cracking in Support of Power Uprate

a. Inspection Scope

The NRC issued Information Notice 2002-26, "Failure of Steam Dryer Cover Plate After a Recent Power Uprate," to alert licensees about a failure of a SD cover plate during operations following a power uprate at a boiling water reactor. In this event, the SD cover plate on the outside of the SD had broken loose. The cover plate separates the steam exit region from the SD and separator space below. One piece of the SD cover plate had fallen onto the separator, causing no apparent damage. Another piece was found in the SD, and a third piece had lodged in the "A" main steam line flow venturi (upstream of the main steam isolation valves). Several other pieces had been swept down the A main steam line into a turbine stop valve strainer. The cover plate failure was caused by fatigue cracking attributed to excessive vibration caused by the synchronization of the cover plate resonance frequency, the nozzle chamber standing acoustic wave frequency, and the vortex shedding frequency. The first two frequencies depend on the construction and geometry of the SD. The vortex shedding frequency depends on the geometry and construction of the SD and the flow rate of the steam passing through the dryer area. The three frequencies synchronized in a very narrow band of steam flow at or near the steam flow required to reach full power under the power uprate operating conditions.

For CPS, the licensee identified and repaired cracks in the SD and had recently lifted an operating power level restriction associated with the SD (reference IR 01630641). The inspectors performed a review of the licensee's corrective actions associated with

maintenance and operation of the SD under EPU conditions, to confirm structural integrity was maintained. Specifically, the inspectors assessed the following attributes during review of the licensee corrective actions associated with maintaining the structural integrity of the SD:

- Complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- Consideration of the extent of condition, generic implications, common cause and previous occurrences;
- Evaluation and disposition of operability/reportability issues;
- Classification and prioritization of the resolution of the problem, commensurate with safety significance;
- Identification of the apparent and/or contributing causes of the problem; and
- Identification of corrective actions, which were appropriately focused to correct the problem.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152 05.

b. Findings

(1) Failure to Update the Updated Safety Analysis Report – Steam Dryer Structural Integrity Function

Introduction. The inspectors identified a Green finding and an associated Severity Level IV NCV of 10 CFR 50.71(e), “Periodic Update of the FSAR,” for the licensee’s failure to update the report with a description of the basis for SD structural integrity submitted to the NRC in support of an EPU license amendment. Specifically, the licensee did not update Section 3.9.5.1.1.9, “Steam Dryers,” of the USAR to include analysis and inspections of the SD each RFO that provide the basis for SD structural integrity. Consequently, the licensee had not completed an inspection of the SD during the most recent RFO in 2013.

Description. On September 11, 2014, the inspectors identified that the licensee failed to update the USAR description of the SD to be consistent with information submitted to the NRC in support of the EPU License Amendment No. 149. The inspectors were concerned that failure to update the USAR to include the basis for SD structural integrity that included inspections each RFO could result in a failure to detect cracking that would challenge the structural integrity of the SD.

In June of 2001, the licensee’s vendor issued report NEDC-32989P, “Safety Analysis Report for Clinton Power Station EPU,” that summarized the results of all significant safety evaluations that justified extending the licensed thermal power at the CPS to 3473 megawatts thermal. Section 3.3.4, “Reactor Internals Structural Evaluation,” of this report included a structural integrity evaluation of the SD under EPU conditions and concluded that the revised stresses due to the increase in upset differential pressure would remain within the design basis allowable limits. In a subsequent vendor report, 0000-0113-7091, “Review and Evaluation of SD Visual Indications Clinton Power Station C1R12-January 2010,” the vendor identified the NEDC-32989P evaluation had assumed that no cracks existed in the SD.

On June 18, 2001, the licensee submitted a request for a license amendment for the EPU which included the vendor analysis NEDC-32989P that evaluated the structural integrity function of the SD under EPU conditions. By letter RS-01-281, dated December 7, 2001, the licensee responded to additional NRC requests for information in support of the amendment request and reported to the NRC that the SD was visually inspected each RFO and any significant crack was repaired. The NRC approved License Amendment No. 149 on April 5, 2002, based in part upon the SD analysis and the SD inspections conducted each RFO that confirmed the structural integrity function.

The function of the SD as described in Section 3.9.5.1.1.9 of the USAR was to remove moisture from the wet steam leaving the separators. However, based upon information submitted to the NRC in support of License Amendment No. 149, the SD had a second function not described in the USAR, which was to maintain structural integrity under normal, upset or faulted (e.g. accident) conditions. The SD structural integrity function was necessary to ensure that a structural failure would not result in generation of debris that adversely affected the function of downstream safety-related equipment such as the MSIVs.

The inspectors reviewed the results of the licensee's SD inspections and crack evaluations to determine if the SD structural integrity function had been maintained. The licensee identified a fatigue crack after the first RFO in the SD drain channel no. 8, vertical weld no. 16 and had been monitoring its length during subsequent SD inspections. This crack was approximately 7 inches in length and had not changed significantly prior to EPU. In 2004, the licensee inspected this crack and identified that the length had increased by 1.125 inches following the first cycle of EPU operation. The licensee completed a weld repair to fix this crack and to reinforce similar areas susceptible to fatigue cracking caused by flow induced vibration. During subsequent SD inspections, the licensee identified several other areas with minor cracking caused by fatigue or intergranular stress corrosion cracking. In the 2010 SD inspection, the licensee determined that the size of the existing cracks had not changed. Based on these results, the licensee elected to perform SD inspections at only two locations during the 2011 RFO, and to perform no inspections of the SD during the 2013 RFO. The inspectors concluded that the SD inspections and evaluation of cracks up through the last full SD inspection completed during the 2010 RFO were sufficient to demonstrate SD structural integrity. However, the licensee's decision to not perform complete SD inspections during each RFO following the 2010 RFO was not consistent with the basis that the NRC had accepted for maintaining the SD integrity function. Additionally, the licensee had completed a number of EC evaluations to confirm the SD structural integrity with existing cracks or repairs and these EC evaluations were not identified in the USAR.

The licensee entered this issue into IR 02223135 "NRC Concern on Steam Dryer Structural Integrity" and was evaluating the USAR for revision to include a description of the structural integrity function of the SD.

Analysis. The inspectors determined that the failure to update the USAR with the basis for SD structural integrity submitted to the NRC was a performance deficiency. The performance 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 would have the potential to lead to a more significant safety concern and is therefore a finding.

Failure to update the USAR with the basis for SD structural integrity could result in a failure to maintain the structural integrity of the SD. Specifically, insufficient SD inspections could result in failure to detect structurally significant cracking and result in a SD failure which generates debris that adversely affects the function of safety-related components (e.g. MSIVs). Additionally, the failure to update the USAR with the basis for SD structural integrity was more than minor because it was associated with the Initiating Event cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions.

Violations of 10 CFR 50.71(e) are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. This violation was also associated with a finding that has been evaluated by the SDP and communicated with a SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding.

Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Initiating Events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

Additionally, in accordance with Section 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the USAR as required by 10 CFR 50.71(e) had not yet resulted in any unacceptable change to the facility or procedures.

Enforcement. Title 10 CFR 50.71(e) requires in part, that licensees shall periodically update the USAR, originally submitted as part of the application for the operating license, to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all the changes necessary to reflect information and analysis submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirement since the submittal of the original USAR, or as appropriate, the last update to the USAR under this section. Contrary to the above, as of September 11, 2014, the licensee did not update the USAR to reflect information submitted to the Commission on June 18, 2001 and December 7, 2001. Specifically, the licensee failed to update the USAR with the basis for maintaining the SD structural integrity function which included analysis and SD inspections conducted each RFO. In accordance with Section 6.1.d.3 of the Enforcement Policy, the violation was classified as a Severity Level IV violation. The licensee entered this issue into the CAP as IR 02223135 and was evaluating the USAR for revision to include a description of the structural integrity function of the SD.



Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's CAP, this violation is being treated as a Severity Level IV NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.  
**(NCV 05000461/2014004-05, Failure to Update the USAR – SD Structural Integrity Function)**

(2) Modifications to Steam Dryer Tie Bars 28 and 30 Without a 10 CFR 50.59 Safety Evaluation

Introduction. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59(d)(1), "Changes, Tests, and Experiments" for the licensee's failure to provide a written evaluation, which provided the basis for the determination that a change did not require a license amendment. Specifically, the licensee made a change pursuant to 10 CFR 50.59(c) with the installation of ½ inch holes adjacent to welds attaching tie bars 28 and 30 to the SD vane assembly and did not provide a written evaluation to provide a basis for the determination that this change would not result in a more than a minimal increase in the likelihood of occurrence of a malfunction of an system, structure or component important to safety (e.g. MSIVs).

Description: On September 11, 2014, the inspectors identified that the licensee failed to document an evaluation that provided a basis for the determination that the SD modifications (holes) at tie bars 28 and 30 implemented under EC 352493, "Strengthen Steam Dryer Channel Weld by Weld Reinforcement, Repair Dryer Bank Weld Cracks, and Use-As-Is Disposition for Dryer and Separator," did not require a license amendment. The inspectors were concerned that the modified SD tie bar locations reduced the material available to resist failure under upset or accident loading conditions such as main steam line break such that it may increase the possibility of tie bar failures resulting in debris that adversely affect the MSIV closure function.

The inspectors reviewed the results of licensee modifications to the SD to determine if the SD structural integrity function had been maintained. In a vendor evaluation report, GE-NE-A22-00110-09-02, "Clinton Power Station Extended Power Uprate – Task T0303-Reactor Pressure Vessel Internals Structural Integrity Evaluation Non-Core Support Structure Components," the vendor identified the SD tie bar locations as an area subjected to significant loading under normal and upset conditions. In 2006, the licensee completed modifications to the SD in accordance with EC 352493 to mitigate crack indications identified in the horizontal attachment weld (H3) at tie bars 28 and 30. The licensee drilled ½ inch diameter holes on each end of the cracked horizontal attachment weld for tie bar 28 and tie bar 30 to stop further crack growth. However, the holes reduced the base metal thickness under portions of the remaining fillet welds connecting the tie bars to the SD vane bank assembly No. 5. The modified tie bar configuration reduced the material available to withstand SD loads and the licensee had not performed a quantitative analysis to confirm that the resultant configuration was adequate to withstand design loads as evaluated in the GE NE-A22-00110-09-02 report. Further, an Electric Power Research Institute report, BWRVIP-139A, "Steam Dryer Inspection and Flaw Evaluation Guidelines," identified the tie bars locations with a high risk ranking for potential cracking and failure that could result in debris that affect operation of downstream components such as the MSIVs. Therefore, the inspectors concluded that the licensee's SD changes to modify the configuration of tie bar 28 and 30 weld attachments had a potential adverse effect on the SD function of maintaining structural integrity.

The inspectors evaluated the changes made to the SD in accordance with NEI 96-07, "Guidelines for 10 CFR 50.59 Implementation," which had been endorsed by the NRC in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments." In Section 4.2, "Screening," of NEI 96 07, guidance is provided for the process of evaluating changes to determine if a 10 CFR 50.59 evaluation is required. In particular, changes that have both positive and adverse effects must be evaluated in accordance with 10 CFR 50.59 and the resultant evaluation must focus on the adverse effects of the change. For the holes installed near tie bars 28 and 30 attachment welds, the resultant modification had both positive (stopped further crack propagation in the horizontal weld) and adverse effects (removed base metal for portions of the remaining attachment welds). Therefore, the inspectors concluded a 10 CFR 50.59 evaluation was required for the changes implemented by the licensee under EC 352493.

The licensee documented this issue in IR 02223135, "NRC Concern on Steam Dryer Structural Integrity," and identified an action to secure a detailed assessment of the degraded tie bar locations from the SD vendor. The licensee consulted with the SD vendor and made a qualitative assessment that the additional unflawed and unaltered portion of the fillet welds present at the end of the tie bar 28 and 30 locations provided a reasonable basis to conclude that these tie bars would not fail and affect the operability of safety-related components.

Analysis. The inspectors determined that the failure to provide a written evaluation, which provided the basis for the determination that a change did not require a license amendment, was a performance deficiency. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with increased likelihood of a SD failure that impacted safety-related equipment due to reduced structural support available at tie bars 28 and 30. The performance 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 it was associated with the Initiating Events cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In addition, the associated violation was determined to be more than minor because the inspectors could not reasonably determine if the changes to the SD at tie bars 28 and 30 would have required NRC prior approval.

Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process instead of the SDP because they are considered to be violations that potentially impede or impact the regulatory process. However, if possible, the underlying technical issue is evaluated under the SDP to determine the severity of the violation. Per IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Initiating Events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance (Green).

**Enforcement:** 10 CFR 50.59, "Changes, Tests, and Experiments," Section (d)(1) states, in part, that the licensee shall maintain records of changes in the facility or procedures, and that the records must include a written evaluation that provides the bases for the determination that the change does not require a license amendment pursuant to paragraph 10 CFR 50.59(c)(2). Contrary to the above, for a change to the SD completed in 2006, the licensee did not provide a written evaluation, which provided the bases for determining that the change did not require a license amendment. Specifically, the licensee made a change pursuant to 10 CFR 50.59(c) with the installation of ½ inch holes adjacent to welds attaching tie bars 28 and 30 to the SD vane assembly and did not provide a written evaluation to provide a basis for the determination that this change would not result in a more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system or component important to safety. In accordance with the Enforcement Policy, the violation was classified as a Severity Level IV violation because the underlying technical issue was of very low risk significance. The licensee documented this issue in IR 02223135 and consulted with the SD vendor and made a qualitative assessment that the additional unflawed and unaltered portion of the fillet welds present at the end of the tie bar 28 and 30 locations provided a reasonable basis to conclude that these tie bars would not fail and affect the operability of safety-related components. Because this violation was of a very low safety-significance, was not repetitive or willful, and was entered into the licensee's CAP as IR 02223135, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000461/2014004-06, Modifications to SD at Tie Bars 28 and 30 without a 10 CFR 50.59 Safety Evaluation)**

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On October 24, 2014, the inspectors presented the inspection results to Mr. D. Kemper 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 inspection results for the areas of ANS evaluation, ERO staffing and augmentation system, maintenance of EP and the drill/exercise performance, ERO readiness, and ANS PIs with Mr. B. Taber on July 3, 2014.
- The inspection results for the areas of radiological environmental monitoring, and PI verification for reactor coolant system-specific activity, occupational exposure control effectiveness, and radiological effluent TS/ODCM radiological effluent occurrences with Mr. B. Taber on July 25, 2014.

- The inspection results for the area of emergency action and emergency plan changes with Mr. R. Freeman on September 8, 2014.
- The inspection results for the area of maintenance of EP with Mr. R. Freeman on September 8, 2014.

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

D. Anthony, Corporate NDE Services Manager  
R. Bair, Chemistry Manager  
K. Baker, Regulatory Assurance Manager  
J. Bond, Emergency Preparedness Manager  
B. Brooks, Security Manager  
R. Campbell, RP Technical Manager  
J. Cunningham, Acting Regulatory Assurance Manager  
C. Dunn, Training Director  
R. Freeman, Emergency Preparedness Manager  
M. Friedman, Radiation Protection Operations Manager  
N. Hightower, Radiation Protection Manager  
T. Krawcyk, Shift Operations Superintendent  
K. Leffel, Operations Support Manager  
D. Kemper, Acting Plant Manager/Operations Director  
S. Kowalski, Senior Manager Design Engineering  
M. Mayer, Acting Security Manager  
S. Mohundro, Engineering Programs Manager  
C. Propst, Nuclear Oversight Manager  
R. Schenck, Work Management Director  
D. Shelton, Operations Services Manager  
J. Smith, Acting Site Engineering Director  
D. Snook, Operations Training Manager  
T. Stoner, Plant Manager  
J. Stovall, Maintenance Director  
B. Taber, Site Vice President  
R. Zacholski, Acting Nuclear Oversight Manager

#### NRC

W. Schaup, Clinton Senior Resident Inspector  
E. Sanchez-Santiago, Clinton Resident Inspector

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened/Closed

05000461/2014004-01	NCV	Exceeded Technical Specification Allowed Outage Time for Electrical Power Systems Due to Auxiliary Equipment Out of Service (Section 1R15.1.b.1)
05000461/2014004-02	NCV	Programmatic Failure to Complete Operability and Functionality Determinations (Section 1R15.1.b.2)
05000461/2014004-03	NCV	Failure to Establish a Surveillance Procedure for Reactor Core Isolation Cooling Pump due to Unacceptable Preconditioning (Section 1R22.1.b)
05000461/2014004-04	NCV	Incomplete Evacuation Time Estimate Submittals (Section 1EP5.2.b)
05000461/2014004-05	NCV	Failure to Update the Updated Safety Analysis Report (USAR) - SD Structural Integrity Function (Section 4OA2.3.b.1)
05000461/2014004-06	NCV	Modifications to Steam Dryer Tie Bars 28 and 30 Without a 10 CFR 50.59 Safety Evaluation (Section 4OA2.3.b.2)

### Closed

None

### Discussed

None

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of 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

- CPS 4304.01, "Flooding," Revision 6
- CPS 4303.01, "Extensive Damage Mitigation Guide," Revision 6a
- CPS 4303.02, "Abnormal Lake Level," Revision 12a
- DWG A22-1052, "Circulating Water Screen House Roof Plan Elevation 730' – Area 12," Revision E
- DWG A22-1032, "Circulating Water Screen House Main Floor Plan Area 12 Elevation 699'," Revision K
- DWG MO1-1116, Sheet 1, "General Arrangement Circulating Water Screen House," Revision F
- DWG MO1-1052, Sheet 4, "General Arrangement Circulating Water Screen House," Revision D
- DWG S22-1016, Sheet 2, "Circulating Water Screen House Enlarged Plan Elevation 699'," Revision AC

### 1R04 Equipment Alignment

- Drawing M05-1035 Sheet 2, "Diesel Generator Auxiliary System Starting Air Exhaust 7 Combustion System," Revision AB
- CPS 3506.01V001, "Diesel Generator and Support System Valve Lineup," Revision 13a
- CPS 3506.01P002, "Division 2 Diesel Generator Operations," Revision 3
- CPS3213.01E001, "Fire Detection and Protection Electrical Lineup," Revision 17a
- CPS3213.01E002, "Fire Detection and Protection 120/125 Volt (AC/DC) Electrical Lineup," Revision 10
- CPS3213.01V001, "Fire Detection and Protection Valve Lineup," Revision 21b
- CPS3213.01V002, "Fire Detection and Protection Sprinkler System Valve Lineup," Revision 9a
- CPS 3309.01E001, "High Pressure Core Spray Electrical Lineup," Revision 8
- CPS 3309.01V001, "High Pressure Core Spray Valve Lineup," Revision 11b
- CPS 3309.01V002, "High Pressure Core Spray Instrument Valve Lineup," Revision 9
- CPS 3211.01V001, "Shutdown Service Water Valve Lineup Division III," Revision 28b
- CPS 3309, "High Pressure Core Spray," Revision 17
- CPS 3317.01V001, "Fuel Pool Cooling and Cleanup Valve Lineup," Revision 12
- CPS 3317.01V002, "FPCC Instrument Valve Lineup," Revision 7
- CPS 3317.01E001, "Fuel Pool Cooling and Cleanup Electrical Lineup," Revision 13
- IR 1546631, "EOID – 1E22F320 Leaking by From RCIC Storage Tank when Shut"
- IR 1572240, "HPCS Manual Injection Valve too Difficult to Operate"
- IR 1629400, "1E22C003 High Ferrous Wear Particles in the Lube Oil"
- IR 1634669, "1E22-F322 Position Indication Failed During 9864.01D001"
- IR 1681025, "1E22S004104 Protective Relay as Found Unsatisfactory"

## 1R05 Fire Protection

- OP-AA-201-009, "Control of Transient Combustible Material," Revision 13
- CPS 1019.05, "Transient Equipment/Materials," Revision 21
- Clinton Power Station Updated Final Safety Analysis Report, Appendix E, "Fire Protection Evaluation Report – Clinton Power Station Unit 1," Revision 16
- Clinton Power Station Updated Final Safety Analysis Report, Appendix F, "Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1," Revision 16
- CPS 1893.04M801, "699 Screen House: Division 2 and 3 SX Pump Rooms and Tunnel Prefire Plan," Revision 6
- CPS 1893.04M800, "699 Screen House: Division 1 SX Pump Room and Tunnel Prefire Plan," Revision 5
- CPS 1893.04M803, "699 Screen House: A North Fire Pump Room and Tunnel Prefire Plan," Revision 6
- IR 01683333, "NRC Questions Transient Materials Inside Bravo Fire Pump Room," July 7, 2014

## 1R11 Licensed Operator Regualification Program

- TQ-AA-155, "Conduct of Simulator Training and Evaluation," Revision 2
- EP-AA-125-1002, "Emergency Response Organization Performance Indicators Guidance," Revision 9
- OP-AA-101-111-1001, "Operations Standards and Expectations," Revision 14
- OP-CL-108-101-1003, "Operations Department Standards and Expectations," Revision 34
- TQ-AA-150, "Operator Training Programs," Revision 10
- CPS 9031.10, "RPS Main Steam Line Isolation Valve Channel Functional," Revision 25c
- CPS 9031.07, "Main Turbine Control Valve Test," Revision 33b
- CPS 9031.06, "Main Turbine Stop Valve and Combined Intermediate Valve Tests," Revision 34c
- CPS 9812.01C001, "Control Rod Scram Timing Checklist," Revision 32f

## 1R12 Maintenance Effectiveness

- NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2
- 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 11
- ER-AA-310-1005, "Maintenance Rule – Dispositioning Between (a)(1 and (a)(2)," Revision 6
- ER-AA-310-1006, "Maintenance Rule – Expert Panel Roles and Responsibilities," Revision 5
- IR 1697161, "Past Infant Mortality Failure of NRE SCR and Circuit Boards"
- IR 1570551, "Computer UPS 1A Fused Switch 910 Would Not Close"
- IR 1570640, "UPS 1A (1IP06E) Fused Disconnect 919 Will Not Energize"
- IR 1571316, "1C71S004A: Loss of Sync On RPS Inverter A"
- IR 1574165, "1RP01E: Division 1 NSPS Inverter Reg. Trans Has Failed"
- IR 1580802, "C1R14 LL: UPS 1A Outage Unexpected Load Loss"
- IR 1601441, "UPS 1B Inverter Momentary Loss of Synch"
- IR 1566174, "(A)(1) Determination Required For Diesel Ventilation System"



- IR 1563659, "Division 1 Diesel Ventilation System Surging During EDG Run"
- IR 1561404, "1TZVD003C: Division 3 VD Exhaust Damper Not Fully Opening"
- IR 1560824, "Excessive Differential Pressure Division 3 DG Ventilation"
- IR 1547294, "1VD01YC; Division 3 DG Supply Air Damper Does Not Open As Expected"
- IR 1546973, "1VD01YC; Damper Would Not Open When Fan 1VD01CC Was Run"
- IR 1507363, "1VD18Y; DG Makeup Fan Supply Damper Found Closed"
- IR 1334761, "1VD01YA; Hydramotor Coupling Disconnected"
- Maintenance Rule Expert Panel Meeting Minutes, September 25, 2014

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

- WC-AA-104, "Integrated Risk Management," Revision 20
- WC-AA-104, Attachment 2; Integrated Risk Screening, Ameren Switchyard Activities
- OP-AA-109-107, "Switchyard Control," Revision 3
- WC-CL-8003-1002, "Clinton Power Station Unit 1 Nuclear Plant Interface Requirements," Revision 0
- OP-CL-109-107-1001, "Interface Between Amerenip and Clinton Power Station for Switchyard Operations, Maintenance and Engineering," Revision 25
- WC-AA-101, Attachment 9, "High Risk Evolution Determination," Revision 20
- CPS 3503.01P001, "Battery and DC Distribution (DC) Ground Isolation," Revision 1
- WO 1759253-01, "Received Unexpected Annunciator 5004-3H, STS Failure," August 4, 2014
- IR 1689515, "RHR B Load Driver Card Failed Teradyne Testing 8630.3"
- IR 1688088, "STS Failure On Division 1"
- IR 1881016, "1E12-F024B RHR B Test Valve to Suppression Pool Failed Open"
- IR 1688691, "Unexpected MCR Alarm Received 5004-3H STS Failure"
- ER-AA-600-1011, "Risk Management Program," Revision 13
- ER-AA-600-1042, "On-line Risk Management," Revision 9
- ER-AA-600, "Risk Management," Revision 7
- ER-AA-600-1012, "Risk Management Documentation," Revision 9
- ER-AA-600-1014, "Risk Management Configuration Control," Revision 6
- WC-AA-101, "On-Line Work Control Process," Revision 19
- WC-AA-104, "Integrated Risk Management," Revision 21
- AD-AA-3000, "Nuclear Risk Management Process," Revision 0
- OP-AA-108-117, "Protected Equipment Program," Revision 3

### 1R15 Operability Evaluations

- OP-AA-108-115, "Operability Determinations (CM-1)," Revision 13
- OP-AA-108-115-1002, "Supplemental Consideration for On-shift Immediate Operability Determinations (CM-1)," Revision 2
- OP-AA-108-104, "Technical Specification Compliance," Revision 1
- CC-AA-309-101, "Engineering Technical Evaluations," Revision 13
- CPS 8673.06, "Magnetrol Level Switch EQ Maintenance," Revision 8
- CPS 5063.04, "Turbine Exhaust Drain Trap Level High," Revision 31b
- CPS 9068.01, "Hydrogen Mixing System Operability Test" Revision 35d
- CPS 9068.01D001, "Hydrogen Mixing System Operability Test Data Sheet," Revision 33d
- EC 333971, "Install Blind Coupling Outside the Containment at SX Penetrations 1MC-204 and 1MC-205 On Lines 1SX93DB-3" and 1SX8BB-3" Respectively," Revision 0
- Drawing M05-1079, "P&ID Reactor Core Isolation Cooling (RCIC)" Revision AH
- ECN 31679, February 28, 2000
- WO 00633425-1, "EQ-CL050-02 Replace Switch Mechanism and Housing," January 28, 2013

- IR 1685137, "NRC Question – LPCS Min Flow Piping Movement During 9052.01"
- IR 2345063, "NRC Questions On Functional Basis in Specific Issue Reports"
- IR 1685711, "NRC Inspector Has Question On 1VR08C Room Cooling Fan"
- IR 1692665, "Error in USAR for CGCS Room Cooling"
- IR 1684967, "1VR08C Did Not Run During DW Vent/Has No Power"
- IR 1631144, "1VR08C Did Not Run During DW Vent/Has No Power"
- IR 1578969, "1VR08C Did Not Run During 9068.01"
- CPS 3412.01, "Essential Switchgear Heat Removal," Revision 15
- OP-AA-102-104, Attachment 2, "Unit 1 Standing Order," VX System Operations and ORM 2.4.9, June 6 2014
- IR 01674754, "NRC Senior Resident Question On VX Operability," June 24 2014
- IR 01683023, "Tracking of Actions With VX System Out of Service," July 17, 2014
- IR 01679084, "Evaluate Impact of Not Flushing VX Components," July 6, 2014
- IR 01678179, "Evaluate Impact to C1R15 VX and SX Online Become Outage," July 2, 2014
- IR 01693256, "Cyclic Performance in Operability/Functionality Reviews," August 2014
- IR 01593809, "NRC Resident Question On Operability Review of IR 01592687," December 5, 2014
- IR 01592687, "LPCS Discharge Pressure Hi Annunciator 5063-3G Received," December 4, 2014
- IR 01620607, "Unexpected Alarm 5064-8F, Shutdown Header Pressure High," February 13, 2014
- IR 01623312, "NRC Resident Questions Immediate Operability Level of Detail," February 19, 2014
- IR 01685413, "Lack of Functionality Assessment," July 24, 2014
- IR 01673243, "Tree Inspection Indicates Need for Cutting/Trimming," June 19, 2014
- IR 02345063, "NRC Questions On Functional Basis in Specific Issue Reports," September 12, 2014
- IR 01684967, "1VR08C Did Not Run During DW Vent/Has No Power," July 23, 2014
- IR 01631144, "1VR08C Did Not Run During DW Vent/Has No Power," March 10, 2014
- IR 01578969, "1VR08C Did Not Run During CPS 9068.01," October 31, 2013

#### 1R18 Plant Modifications

- CC-AA-10, "Configuration Control Process Description," Revision 7
- CC-AA-20, "Configuration Management," Revision 1
- CC-AA-102, "Design Input and Configuration Change Impact Screening," Revision 27
- CC-AA-103, "Configuration Change Control for Permanent Physical Plant Changes," Revision 25
- CC-AA-112, "Temporary Configuration Changes," Revision 20
- EC 398188, "Replace Obsolete Fire Protection Printer Terminal (Digital)," Revision 0
- WO 01720404-02, "Replace Obsolete Fire Protection Printer"
- WO 01720404-03, "Perform Testing Fire Protection Printer"
- WO 01720404-04, "Acceptance of Test Results Fire Protection Printer"
- EC 398759, "Temporary Installation of Modified ARPM Quad-Trip Card for Modification Development," Revision 1
- WO 01753504-02, "Install Modified ARPM Quad-Trip Card"
- WO 01753504-03, "Perform Burn In on Spare ARPM Quad-Trip Card"
- CPS 9431.64C002, "APRM Channel B Calibration Checklist," Revision 0e
- WO 01753504-04, "Remove Modified ARPM Quad-Trip Card"
- CPS 9431.64D003, "APRM Channel B Calibration Data Sheet," Revision 1
- IR 02344753, "Division 2 Flow Gain Adjustment – APRM," September 12, 2014

- WO 01753504-06, "Bench Test Modified ARPM Quad-Trip Card"

#### 1R19 Post-Maintenance Testing

- MA-AA-723-300, "Diagnostic Testing of Motor Operated Valves," Revision 8
- ER-AA-300, "Motor Operated Valve Program Administrative Procedure," Revision 7
- ER-AA-302, "Motor Operated Valve Program Engineering Procedure," Revision 5
- CPS 9071.02, "Diesel Fire Pump Capacity Checks," Revision 40b
- CPS 9071.01, "Diesel Driven Fire Pumps Operability Test," Revision 40
- CPS 9432.01D001, "NS4 MSL Flow E310N086A Channel Calibration Data Sheet," Revision 36a
- CPS 9432.01, "NS4 MSL Flow E31-No86A Channel Calibration," Revision 38e
- CPS 8651.06, "ECCS HPCS Line Break E31-N081 Channel Calibration," Revision 33d
- CPS 8801.24, "Rosemount Series 1152/1154 Pressure Transmitter Replacement," Revision 1c
- MA-AA-716-012, "Post Maintenance Testing," Revision 19
- WO 918028, "Perform Transmitter Replacement for 1E31N086A," July 16, 2014
- WO 1715940-02, "0FP01PA Fire Pump Crankcase Pressure Check," July 16, 2014
- WO 1754798-01, "071.01A21 Op Fire Pump A Oper," July 16, 2014
- WO 1696235-01, "EQ-CL021-11 Replace Rosemount Transmitter," September 3, 2014
- WO 1759253-04, "IM PMT For Load Driver Replacement," August 4, 2014
- WO 1759253-01, "Received Unexpected Annunciator
- EC 380116, "Replace Obsolete Level Switch For 1LSCM279," Revision 0
- WO 01381566, "Replace Level Switch 1LSCM279"
- CPS 8492.01C001, "Cable Termination Checklist," Revision 24
- CPS 8492.01C014, "Two Wire Insulated Butt Splice Not Insulated With Tape or Raychem Checklist," Revision 24
- CPS 8492.01D014, "Two Wire Insulated Butt Splice Not Insulated With Tape or Raychem Data Sheet," Revision 23
- WO 01313285, "Modification for 1FC004B New Internals"
- CPS 9061.10, "Fuel Pool Cooling Valve Operability," Revision 47a
- CPS 9061.10D001, "Fuel Pool Cooling Pump and Valve Operability Data Sheet," Revision 41a
- IR 01689950, "1FC004B Stroke Time Less that Acceptable Criteria," August 6, 2014
- IR 01689987, "Maximum Packing Friction Out of Tolerance per Flow Scan," August 6, 2014

#### 1R22 Surveillance Testing

- CPS 9054.01C002, "RCIC (1E51-C001) High Pressure Operability Checks," Revision 8
- WO 01743066-1, "9054.01A20 Op RCIC Pump Operability," July 29, 2014
- CPS 9052.01, "LPCS/RHR A Pumps & LPCS/RHR A Water Leg Pump Operability," Revision 48c
- CPS 9058.02, "RCIC/ECCS Water Leg Pump Comprehensive Testing," Revision 2a
- CPS 9052.01D001, "LPCS/RHR A Pumps & LPCS/RHR A Water Leg Pump Operability Data Sheet," Revision 47c
- CPS 9051.01, "HPCS Pump and HPCS Water Leg Pump Operability," Revision 47d
- WO 01732561-01, "9051.01R22 OP HPCS Pump and Water Leg Pump Operability," July 16, 2014
- CPS 9015.01D001, "SLC Pump and Valve Data Sheet," Revision 38a
- CPS 9015.01, "Standby Liquid Control System Operability," Revision 41
- CPS 9069.01, "Shutdown Service Water Operability Test," Revision 48c
- CPS 9069.01D001, "Shutdown Service Water Operability Data Sheet," Revision 46b

- IR 01606560, "1SX082B Does Not Go Shut," January 10, 2014
- IR 01574911, "1SX082B Will Not Open or Close From MCR," October 21, 2014
- IR 02389727, "Inadequate Documentation During CPS 9069.01," October 2, 2014
- CPS 9981.01, "Diesel Fuel Oil Sampling and Analysis," Revision 34
- CY-CL-6423-04, "Determination of Diesel Fuel Particulate Contamination by Laboratory Filtration," Revision 0
- CY-CL-6423-02, "Diesel Fuel Water and Sediment Content," Revision 0
- PES-P-006, "Diesel Fuel Oil," Revision 10
- DWG M05-1036, "Diesel Generator Fuel Oil System," Revision S
- Nuclear Procurement Issues Committee Audit Checklist – Analysts Inc.
- Audit Report Number: SR 2014-01, Analysts Inc.

#### 1EP2 Alert and Notification Evaluation

- Off-Site Emergency Plan Alert and Notification System Addendum for the Clinton Power Station, November 2009
- EP-MW-121-1005, "Siren Outage Reporting and Monitoring," Revision 3
- Clinton Alert and Notification System Backup is Route Alerting FEMA Letter, December 10, 2012
- Siren Testing and Maintenance Data, September 2012 through June 2014
- IR 01642592, "EP Siren Microwave Inoperable," April 3, 2013

#### 1EP3 Emergency Response Organization Augmentation Testing

- EP-AA-1003 Addendum 2, "Evacuation Time Estimates for Clinton Power Station Plume Exposure Pathway Emergency Planning Zone," Revision 1
- Current ERO Team Staffing, June 30, 2014
- EP-AA-112-100-F-06, "ERO Notification or Augmentation," Revision Q
- EP-AA-122-100-F-13, "Call-in Drill (CID) Checklist," Revision A
- TQ-AA-113, "ERO Training and Qualification," Revision 23
- Drive-in Augmentation Drill Results, August 17, 2010
- Call-in Augmentation Drill Results, December 19, 2012
- Call-in Augmentation Drill Results, March 23, 2013
- Call-in Augmentation Drill Results, May 7, 2013
- Call-in Augmentation Drill Results, September 26, 2013
- Call-in Augmentation Drill Results, November 21, 2013
- Call-in Augmentation Drill Results, March 31, 2014

#### 1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

- Evacuation Time Estimate by Arcadis, December 2012
- Evacuation Time Estimate by KLD, Revision 0
- EP-AA-1000, "Standardized Radiological Emergency Plan," Revision 25
- EP-AA-1003, "Radiological Emergency Plan Annex for Clinton Power Station," Revision 24
- EP-AA-111, "Emergency Classification and Protective Action Recommendations, Revision 18
- EP-AA-111-F-07, "Clinton Plant Based PAR Flowchart," Revision E
- EP-AA-112-200-F-31, "TSC Security Coordinator Hostile Action Event Checklist," Revision A
- EP-AA-120, "Emergency Plan Administration," Revision 15
- NOSA-CPS-13-03, "Emergency Preparedness Audit Report," March 18, 2013
- NOSA-CPS-14-03, "Emergency Preparedness Audit Report," March 17, 2014

- NOSCPA-CL-12-17, "Clinton Emergency Preparedness Performance Report," October 25, 2012
- NOSCPA-CL-13-18, "Clinton Emergency Preparedness Performance Report," November 11, 2013
- NOSCPA-CL-14-08, "Clinton Emergency Preparedness Performance Report," May 13, 2014
- CL-PI-02-12, "April/August Full Scale Drill Report," September 21, 2012
- CL-PI-04-12, "August/September TSC Table-top Drill Report," September 27, 2012
- CL-PI-05-12, "October 9, 2012, Full Scale PI Drill Report," October 23, 2012
- CL-PI-06-12, "TSC Table-top Drill Report," December 14, 2012
- CL-PI-01-12, "October/November Table-top Drill Report," December 28, 2012
- CL-PI-01-13, "July 2013 TSC Table-top Drill Report," August 16, 2013
- CL-PI-02-13, "June 2013 TSC Table-top Drill Report," December 26, 2013
- CL-PI-04-13, "August/December TSC Table-top Drill Report," December 26, 2013
- CL-PI-05-13, "August/November TSC Table-top Drill Report," December 19, 2013
- CL-HP-02-13, "December 2013 Health Physics Drill," December 20, 2013
- Clinton 2013 Medical and Health Physics Drill Findings and Observation Report, June 20, 2013
- Clinton 2013 NRC Graded Ingestion Pathway Exercise Evaluation Report, April 24, 2013
- 2013/2014 Emergency Planning Mailer For The Clinton Area
- IR 01499453, "Response to Unannounced ERO Call-in Drill," April 9, 2013
- IR 01677503, "Missed ETE Revision Implementation Date," July 1, 2014
- IR 01678256, "Clinton Emergency Plan Annex Missing Detail Directed by Standard Plan," July 2, 2014
- IR 01294009, "Final Rule Enhancement to EP Regulations," November 23, 2011
- IR 01667865, "NOS Rates EP Performance as Yellow," June 4, 2014
- IR 01419244, "ERO Drill Deficiencies Require Common Cause," September 27, 2012
- IR 01488153, "EAL Rad Monitor Computer Points Out-of-Service," March 15, 2013
- IR 01674177, "ERDS Link to NRC Inadvertently Disconnected," June 23, 2014

#### 1EP6 Drill Evaluation

- EP-AA-125-1002, "Emergency Response Organization Performance Indicators Guidance," Revision 9
- EP-AA-125-001, "Drill and Exercise Scheduling, Development and Conduct," Revision 19

#### 2RS7 Radiological Environmental Monitoring Program

- 2012 Annual Environmental Operating Report, April 29, 2013
- 2013 Annual Environmental Operating Report, April 24, 2014
- 2012 Annual Radioactive Effluent Release Report, April 29, 2013
- 2013 Annual Radioactive Effluent Release Report, April 24, 2014
- Clinton Meteorological Tower Calibrations, February and June 2014
- Offsite Dose Calculation Manual, Revision 23
- Title 10 CFR 61 Analyses, Dry Active Waste, January 23, 2013
- Annual Land Use Census, 2012-2013
- Ground Water Radiochemistry Analysis, Various
- Reactor Core Isolation Cooling Tank Overflow Evaluation, April 1992
- Environmental Air Sampling Station Calibration and Maintenance Records, Various
- Environmental Sampling Procedures Manual, Revision 15
- CY-AA-170-1000, "Radiological Environmental Monitoring Program and Meteorological Program Implementation," Revision 8

- IR 01494688, "REMP Air Sample Station Walkdown Results," March 29, 2013
- IR 01657185, "Trend Identified ODCM Anomaly," May 7, 2014
- IR 01470316, "Self-Assessment Radioactive Groundwater Protection Plan," July 26, 2013
- IR 01685370, "NRC Identified: Annual Report Uses Term TLD," July 24, 2014
- IR 01685375, "ODCM Requiring Revision," July 24, 2014
- IR 01685413, "Lack of Functionality Assessment," July 24, 2014

#### 4OA1 Performance Indicator Verification

- EP-AA-114, "Notifications," Revision 12
- NRC Performance Indicator Data Sheets, "NRC Indicator Alert and Notification System Reliability (EP-3)," First Quarter 2013 Through the First Quarter 2014
- NRC Performance Indicator Data Sheets, Emergency Preparedness – ERO Participation First Quarter 2013 Through the First Quarter 2014
- NRC Performance Indicator Data Sheets, "Emergency Preparedness – Drill/Exercise Performance," First Quarter 2013 Through the First Quarter 2014
- NRC RETS/ODCM Radiological Effluents Occurrences, October 2013 Through June 2014
- Dose Equivalent Iodine Determination, October 2013 Through June 2014
- IR 01430884, "DEI Calculations," October 24, 2012
- IR 01571348, "Drywell Dose Alarm," October 12, 2013
- IR 01611122, "Chemistry Technician Received an ED Dose Alarm," January 22, 2014
- IR 01621339, "Enhancement to 800' TB LHRA," February 12, 2014
- IR 01620706, "LHRA Ladder Lock Height Requirements," February 12, 2014
- IR 01622252, "HRA/LHRA Door Latch Inspections," February 14, 2014
- CY-CL-3222-10, "Reactor Sample Station," Revision 5
- CY-CL-6721-01, "Reactor Water Radioisotopic Analysis," Revision 0
- CY-AA-130-3010, "Dose Equivalent Iodine Determination," Revision 3
- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7
- ER-AA-2008, "Mitigating Systems Performance Index (MSPI) Monitoring and Margin Evaluations", Revision 3
- LA-AA-2200, "Mitigating System Performance Index Data Acquisition & Reporting," Revision 5
- CL-MSPI-01, "Clinton MSPI Basis Document," Revision 10
- MSPI Derivation Report, Unreliability Index, MSPI Emergency AC Power System, June 2014
- MSPI Derivation Report, Unreliability Index, MSPI Cooling Water System, June 2014
- MSPI Derivation Report, Unavailability Index, MSPI Emergency AC Power, June 2014
- MSPI Derivation Report, Unavailability Index, MSPI Cooling Water System, June 2014
- IR 1571294, "1SX014A: Unable to Perform As Found Diagnostic Testing"

#### 4OA2 Identification and Resolution of Problems

- IR 02223135, "NRC Concern On Steam Dryer Structural Integrity," September 11, 2014
- IR 02209844, "Vendor Suggested Actions On Steam Dryer Not Evaluated," September 11, 2014
- IR 01630641, "Power Increase Restrictions Resolved," March 7, 2014
- IR 00725306, "Cracking Identified On Dryer Drain Channel Weld V-14," January 17, 2008
- IR 00454086, "2 Cracks Identified On Steam Dryer Bank 5 Horizontal Weld H3," February 15, 2006
- IR 00174989, "Steam Dryer Failure/GE SIL 644," September 9, 2003

- EC 352493, "Strengthen Steam Dryer Channel Weld by Weld Reinforcement, Repair Dryer Bank Weld Cracks, and Use As-Is Disposition for Dryer and Separator," Revision 1
- EC 386910, "Evaluation of GE INR's (C1R13)," Revision 0
- EC 396980, "Evaluate Steam Flow Limitations On Steam Dryer," Revision 0
- EC 375009, "Evaluate Final Data from EPU," Revision 0
- EC 347272, "Repairs to Steam Dryer Drain Channel #8," Revision 0
- EPRI BWRVIP-139-A, "Steam Dryer Inspection and Flaw Evaluation Guidelines," July 2009
- IVI Program Plan, Revision 7
- GEH-000N2140, "Clinton Power Station Qualitative Evaluation of Steam Dryer Structural Adequacy for Plant Operation at 3473 MWt," Revision 0
- GEH Drawing 795E442, "Sheet 1, Steam Dryer," Revision 3
- GEH Drawing 767E156, "Sheet 1, Steam Dryer," Revision 2
- GEH Drawing 767E157, "Sheet 1, Steam Dryer," Revision 2
- GEH Drawing 767E158, "Sheet 1, Steam Dryer," Revision 3
- GEH Drawing 767E159, "Sheet 1, Steam Dryer," Revision 3
- GEH Drawing 767E160, "Sheet 1, Steam Dryer," Revision 4
- GEH Drawing 767E160, "Sheet 2, Steam Dryer," Revision 3
- GEH Drawing 767E161, "Sheet 1, Steam Dryer," Revision 4
- GEH Drawing 767E162, "Sheet 1, Steam Dryer," Revision 6
- GE-NE-0000-0046, "Steam Dryer Drain Channel Weld Reinforcement Safety Evaluation," Revision 0
- GE-NE-A22-00110-09-02, "Clinton Power Station Extended Power Uprate – Task T0303-RPV Internals Structural Integrity Evaluation Non-Core Support Structure Components," Revision 0
- GE-NE-A22-00110-12-01-01, "Clinton Power Station Extended Power Uprate – Task T0306- Steam Dryer/Separator Performance," Revision 1
- GEH-RPT-000-0080-0345 R0, "Review and Evaluation of Steam Dryer Visual Indications Clinton Power Station C1R11," January 2008
- GEH-RPT-0000-0113-7091, "Review and Evaluation of SD Visual Indications Clinton Power Station C1R12 - January 2010," February 2010
- GEH-RPT-2MKXXV-LH1-IVVI, "IVVI of RPV Internals C1R13 (2011 Fall Outage)," December 15, 2011
- GEH-RPT-C1R12-7480-1-26BCEU-LH1-IVVI, "IVVI of RPV Internals C1R12 (2010 Spring Outage)," January 28, 2010
- GEH-RPT-C1R11-JXGL5-LH1-IVVI, "IVVI of RPV Internals C1R11 (2008 Winter Outage)," January 29, 2008
- GEH-RPT-C1R10-MJMYK-LH1-IVVI, "IVVI of RPV Internals C1R10 (2006 Spring Outage)," February 18, 2006
- GEH-RPT-C1R09-MJ4YW-LH1-IVVI, "IVVI of RPV Internals C1R09 (2004 Spring Outage)," February 18, 2004
- GE RPT-IVVI-995-JLEB5-LH1-IVVI, "IVVI of RPV Internals C1R08 (2002 Spring Outage)," April 2002
- GE RPT-IVI-RF07-KCD9Z, "IVI of RPV Internals C1R07 (2000 Spring Outage)," November 8, 2000
- GE SIL No. 644, "BWR Steam Dryer Integrity," Revision 2
- GE SIL No. 474, "Steam Dryer Drain Channel Cracking," October 26, 1988
- NEDC-32989P, "Safety Analysis Report for Clinton Power Station Extended Power Uprate," June 2001
- NIS 1, "Owners Report for Inservice Inspection RF05," Revision 0

- NIS 1, "Owners Report for Inservice Inspection RF04," Revision 0
- NIS 1, "Owners Report for Inservice Inspection RF03," Revision 0
- NIS 1, "Owners Report for Inservice Inspection RF02," Revision 0
- NIS 1, "Owners Report for Inservice Inspection RF01," Revision 0



## LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
ANS	Alert and Notification System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CPS	Clinton Power Station
△CDF	Delta Core Damage Frequency
EC	Engineering Change
EP	Emergency Preparedness
EIPs	Emergency Preparedness Implementing Procedures
EPU	Extended Power Uprate
ERO	Emergency Response Organization
ETE	Evacuation Time Estimate
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
LCO	Limiting Condition for Operation
LOOP	Loss of Offsite Poser
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
ORM	Operational Requirement Manual
ORO	Offsite Response Organizations
PARS	Publicly Available Records
PI	Performance Indicators
RCIC	Reactor Core Isolation Cooling
REMP	Radiological Effluent Monitoring Program
RFO	Refueling Outage
SAPHIRE	Systems Analysis Programs for Hands On Integrated Reliability Evaluations
SD	Steam Dryer
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SSC	Structure, System and Component
TS	Technical Specification
USAR	Updated Safety Analysis Report
WO	Work Order

M. Pacilio

-2-

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Sincerely,

**/RA/**

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