



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

February 11, 2014

EA-14-012

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

**SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT
AND EXERCISE OF ENFORCEMENT DISCRETION 05000461/2013005**

Dear Mr. Pacilio:

On December 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Clinton Power Station. On January 16, 2014, the NRC inspectors discussed the results of this inspection with Mr. K. Taber and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

Based on the results of this inspection, two NRC-identified and two self-revealed findings of very low safety significance were identified. Two of these findings involved violations of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. Because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating these issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

A violation involving a failure to set secondary containment during Operations with the Potential to Drain the Reactor Vessel (OPDRV) was identified. Specifically, from October 12, 2013, through October 24, 2013, Clinton Power Station performed a total of 17 activities in four separate work windows without setting secondary containment, which is a violation of technical specification (TS) 3.6.4.1. The NRC issued EGM 11-003, "Enforcement Guidance Memorandum on Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Containment Requirements During Operations with a Potential for Draining the Reactor Vessel," Revision 2, on December 13, 2013, allowing for the exercise of enforcement discretion for such OPDRV-related TS violations, when certain criteria are met. The NRC concluded that Clinton Power Station met these criteria. Therefore, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion and refrain from issuing enforcement for the violation.

If you contest the violations or significances of these 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 Inspectors 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.

As a result of the Safety Culture Common Language initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

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

Sincerely,

/RA/

Anne T. Boland, Director
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000461/2013005
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: 05000461/2013005

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station, Unit 1

Location: Clinton, IL

Dates: October 1, through December 31, 2013

Inspectors: W. Schaup, Senior Resident Inspector
D. Lords, Resident Inspector
S. Bell, Health Physicist
D. Jones, Reactor Inspector
J. Laughlin, Emergency Preparedness Inspector
R. Walton, Operations Engineer
S. Mischke, Resident Inspector, Illinois Emergency
Management Agency

Approved by: Anne T. Boland, Director
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Inspection Report 05000461/2013005, 10/01/13 – 12/31/13, Clinton Power Station, Unit 1, Outage Activities, Identification and Resolution of Problems, Occupational As-Low-As-Reasonably-Achievable Planning and Controls, and Follow-up of Events and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by the resident inspectors and announced baseline inspections by regional inspectors. Four Green findings, two of which had an associated non-cited violation (NCV), 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" (SDP) dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas" dated October 28, 2011. 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 4, dated December 2006.

A. **NRC-Identified and Self-Revealed Findings**

Cornerstone: Mitigating Systems

- **Green**. Inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings for the failure to follow station procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal," Revision 8, to obtain engineering approval for seismic scaffolds not complying with specific requirements of approved station procedures during the C1R14 outage. Specifically, seismic scaffolds identified during walkdowns by the inspectors did not meet procedural requirements for required clearances from or tie off to safety-related components and did not have the required engineering evaluation and approval for acceptability. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 01574003 and completed the required engineering review and approval.

The inspectors determined that the licensee's failure to follow the station procedure for scaffold installation, inspection, and removal was a performance deficiency. The performance deficiency is more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems (MS) cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix G "Shutdown Operations Significance Determination Process," the finding was screened against Attachment 1, Checklist 8 and found to be of very low safety significance (Green) because the finding did not: 1) increase the likelihood of a loss of reactor coolant system (RCS) inventory, 2) degrade the licensee's ability to terminate a leak path or add RCS inventory when needed, 3) significantly degrade the licensee's ability to recover decay heat removal once it is lost, 4) result in one or less safety relief valves being available to establish a heat removal path to the suppression pool with the vessel head on. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the resources component, in that the licensee ensures that personnel, equipment, procedures and other resources are available and adequate to assure nuclear safety. Specifically, the licensee failed to ensure that the

scaffold coordinator and superintendents had the required training to assure nuclear safety while erecting seismic scaffolds. [H.2(b)] (Section 1R20)

- Green. Inspectors reviewed a self-revealing NCV of 10 CFR 50.65(a)(4) for failing to manage risk when the Division 4 Nuclear System Protection System (NSPS) inverter unexpectedly transferred from its normal direct current (DC) power source to its alternate alternating current (AC) power source during the Average Power Range Monitor (APRM) 'D' surveillance test. Specifically, the installed operational barrier failed to protect a fuse block when a test cable connector was inadvertently dropped. This caused a momentary electrical short and resulted in the inverter to transfer power sources. The licensee documented this issue in the CAP as IR 01476647 and performed (1) a stand-down with instrument maintenance craftsmen to discuss the event and lessons learned, (2) changes to the licensee's risk/hazards assessment process to include a checklist designed to aid in challenging jobsite conditions, (3) conduct of paired observations by maintenance department managers on use of the checklist, and (4) a case study with the maintenance shops using this event to highlight determining risk perception and robust protective barriers.

The inspectors determined that the licensee's failure to adequately manage the risk associated with performance of surveillance testing for APRM 'D' was a performance deficiency. The performance deficiency is more than minor because it was associated with the configuration control attribute of the MS 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. The performance deficiency involved the licensee's assessment and management of risk associated with performing maintenance in accordance with 10 CFR 50.65(a)(4); therefore the inspectors used IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," and determined that a detailed risk evaluation would be required since the issue represented an actual loss of safety function of a system. The Region III Senior Reactor Analyst (SRA) completed a detailed risk evaluation using the NRC's Standardized Plant Analysis Risk (SPAR) model for Clinton Power Station (CPS), Version 8.17 and SAPHIRE Version 8.09 to calculate an Incremental Core Damage Probability Deficit (ICDPD) for the unevaluated condition. The SRA ran the SPAR model conservatively assuming that High Pressure Core Spray System (HPCS) was unavailable during the 6-hour time. The result was an ICDPD of less than 2E-08/year. In accordance with IMC 0609, Appendix K, because the ICDPD was not greater than 1E-06/year, the finding was determined to be of very low safety significance (i.e., Green). The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the work practices component, in that personnel work practices are used commensurate with the risk of the assigned task, such that work activities are performed safely. Specifically, the technicians did not perform adequate self or peer checks after installation of the barrier to ensure the barrier would provide protection from shorting. [H.4(a)] (Section 4OA3)

Cornerstone: Barrier Integrity

- Green. Inspectors identified a finding of very low safety significance associated with the licensee's failure to identify an embedded operator challenge. Specifically, the licensee proceduralized compensatory actions which were necessary in order to maintain a negative pressure (-0.25 in. H₂O) inside the fuel building when opening the inner railroad

bay door. The licensee documented this issue in the CAP as IR 1589104 and subsequently screened this issue as an operator challenge.

The inspectors determined that the licensee's failure to identify an embedded operator challenge was a performance deficiency. This finding was more than minor significance because it was associated with the Barrier Integrity Cornerstone attribute of structure, system and component (SSC) and barrier performance, and adversely affected the cornerstone objective to provide reasonable assurance that the physical design barrier of secondary containment protects the public from radionuclide releases caused by accidents or events. This finding is of very low safety significance due to answering 'no' to all questions under the Barrier Integrity Cornerstone column of IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors concluded that this finding affected the cross-cutting aspect of problem identification and resolution. Specifically, the licensee failed to implement its CAP with a low threshold for identifying issues and did not identify this challenge to operators completely, accurately, and in a timely manner commensurate with its safety significance. [P.1(a)] (Section 4OA2.b.1)

Cornerstone: Occupational Radiation Safety

- Green. Inspectors reviewed a self-revealing finding due to the licensee having unplanned and unintended occupational collective radiation dose because of deficiencies in the licensee's Radiological Work Planning and Work Execution Program. Specifically, the licensee failed to properly incorporate as-low-as-reasonably-achievable strategies and insights while planning and executing work activity during the C1R13 refueling outage. During the In-Service Inspection (ISI) examinations performed inside the bio-shield, the dose overage was 28.410 person-rem (68 percent higher than initial estimate). This result was caused by poor radiological planning and work execution of these tasks. The licensee entered this issue into their CAP as IR 01593794 and incorporated the lesson learned into the outage planning.

The inspectors determined that the failure to appropriately plan and coordinate outage activities, together with the failure to properly incorporate ALARA strategies or insights while planning and executing ISI examinations inside the bio-shield during the C1R13 refueling outage was a performance deficiency. The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone. This issue affected the cornerstone objective of ensuring the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding is also very similar to IMC 0612, Appendix E, "Examples of Minor Issues," Example 6.i. This example provides guidance that an issue is not minor if the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. The inspectors determined that this finding was of very low safety significance because CPS's 3-year rolling average collective was less than the 240 person-rem/unit referenced within IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." This finding did not have a cross-cutting aspect due to not being reflective of current performance as exemplified by improvements in the recently completed C1R14 outage. (Section 2RS2)

B. Licensee-Identified Violations

- A violation of very low safety significance that was identified by the licensee was reviewed by the inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. The violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

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

- On October 7, 2013, the licensee reduced power to about 16.7 percent and manually scrammed the reactor to commence refueling outage C1R14.
- On October 28, 2013, the licensee started up the reactor after completing refueling outage C1R14 and returned to full power on November 11, 2013.
- On December 8, 2013, the licensee manually scrammed the reactor from 97 percent power due to a 480 volt transformer failure on the 1A bus. The unit was restarted on December 12, 2013 and returned to approximately 23 percent power.
- On December 13, 2013, the licensee manually scrammed the reactor from approximately 23 percent power while transferring feed control from the motor operated feed pump to the turbine driven feed pump and prior to exceeding the reactor water level band automatic trip set point. The unit was restarted on December 15, 2013, and returned to full power on December 19, 2013.

1. **REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Emergency Reserve Auxiliary Transformer and Division 2 Emergency Diesel Generator with Reserve Auxiliary Transformer and Division 1 Emergency Diesel Generator out-of-service for planned maintenance;
- Shutdown Service Water (SX) Division 2 with SX Division 1 out-of-service for planned maintenance; and
- Spent Fuel Pool Cooling A train with Spent Fuel Pool Cooling B train out-of-service for planned maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones. The inspectors reviewed operating procedures, system diagrams, Technical Specification (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 action requests 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.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On November 22, 2013, the inspectors performed a complete system alignment inspection of the Reactor Core Isolation Cooling (RCIC) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. In addition, the inspectors verified that equipment alignment problems were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

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 D-3, Diesel Generator Building Division 2 Diesel Fuel Tank Room – Elevation 712'0";
- Fire Zone D-6a, and b, Diesel Generator Building Division 2 Diesel Generator and Day Tank Room – Elevation 737'0";
- Fire Zone R-1f, Waste Tank Room – Elevation 702'0";

- Fire Zone M-4, Circulating Water Screen House, Fire Pump A Room – Elevation 699’0”;
- Fire Zone A-2a, Reactor Core Isolation Cooling Pump Room – Elevation 707’6”;
and
- Fire Zone A-2c, Low Pressure Core Spray Pump Room – Elevation 707’6”.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee’s fire plan. The inspectors 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.

In addition, the inspectors verified that fire protection related problems were entered into the licensee’s CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

These activities constituted six quarterly fire protection inspection samples as defined in IP 71111.05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05)

a. Inspection Scope

On November 13, 2013, the inspectors observed a fire brigade drill activation due to an oil fire ignited by a temperature switch associated with the B control room ventilation unit. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies and openly discussed those in a self-critical manner at the drill debrief. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

In addition, the inspectors verified that deficiencies were entered into the licensee's CAP with the appropriate characterization and significance.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05.

b. Findings

No findings were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08)

From October 23 through October 24, 2013, the inspectors conducted a review of the implementation of the licensee's ISI program for monitoring degradation of the RCS, risk significant piping and components and containment systems.

The ISI described in Sections 1R08.1 and 1R08.2 below constituted one inspection sample as defined in IP 71111.08.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors reviewed the following non-destructive examinations mandated by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements and if any indications and defects were detected, to determine whether these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement.

- Ultrasonic examination (UT) of feedwater pipe to elbow weld (1FW-2-5-3), Report No. UT-13-008;
- UT of the reactor head meridional weld (CH-MC) at 135 degrees, Report No. C1R14-017;
- UT of the reactor head meridional weld (CH-MD) at 195 degrees, Report No. C1R14-018;
- Magnetic particle examination (MT) of the makeup condensate pipe to penetration weld (1-MC-42-A), Report No. MT-13-002;
- MT of the low pressure core spray flange to inlet weld (LPCS-3); Report No. MT-13-001; and
- Liquid penetrant examination of main steam welded attachments (1-MS-A-7PR-WA), Report No. PT-13-003.

Licensee non-destructive surface and volumetric examinations during the prior outage did not identify any relevant or recordable indications; therefore, no NRC review was completed during this inspection.

The inspectors reviewed the following pressure boundary weld, completed for a risk significant system since the beginning of the last refueling outage, to determine if the licensee applied the pre-service non-destructive examinations and acceptance criteria required by the ASME Code Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to

determine if the weld procedure was qualified in accordance with the requirements of the Construction Code and the ASME Code Section IX.

- Removal and replacement of the RCIC water leg pump discharge isolation valve 1E51F062; Work Order No. 01018605; NIS-2 Data Sheet Report Number RF-13-029.

b. Findings

No findings were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems entered into the licensee's CAP and conducted interviews with licensee staff to determine if the licensee had:

- established an appropriate threshold for identifying ISI-related problems;
- performed a root cause (if applicable) and taken appropriate corrective actions; and
- evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification

a. Inspection Scope

On October 25, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator just-in-time training for reactor start up and approach to criticality 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;
- control board manipulations; and
- oversight and direction from supervisors.

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.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk

a. Inspection Scope

On October 7, 2013, the inspectors observed licensed operators perform portions of a unit shut down to support a refueling outage and on October 28, 2013, the inspectors observed licensed operator perform portions of a unit start up. These activities required heightened awareness and were 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;
- correct use and implementation of procedures;
- control board 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.

b. Findings

No findings were identified.

.3 Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the annual written examination, administered by the licensee from November 11, 2013, through December 16, 2013, as required by 10 CFR 55.59(a). The results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training (LORT) Program to meet the requirements of 10 CFR 55.59.

This inspection constitutes one annual licensed operator requalification inspection sample as defined in IP 71111.11A.

b. Findings

No findings were identified.

.4 Biennial Review (71111.11B)

a. Inspection Scope

The inspectors reviewed two weekly written examinations administered by the licensee to licensed senior reactor operator (SRO) and reactor operator (RO) personnel. The inspectors reviewed the examinations to ensure the licensee-developed examinations were consistent with expected quality as required by 10 CFR 55.59(a)(2). The following inspection activities were conducted in-office during the week of December 9, 2013, to assess the effectiveness and adequacy of the facility licensee's implementation and maintenance of its systems approach to training based LORT Program, put into effect to satisfy the requirements of 10 CFR 55.59.

- Licensee Regualification Examinations (10 CFR 55.59(c); SAT Element 4 as Defined in 10 CFR 55.4): The inspectors reviewed the first two weeks of the LORT biennial written examination for both SRO and RO licensed operators to assess the licensee's ability to develop and administer examinations that were acceptable for meeting the requirements of 10 CFR 55.59(a). The inspectors conducted a detailed review of the written examinations to assess content, level of difficulty, presence of psychometric flaws, and overall quality of the written examination.

This inspection constitutes one biennial review licensed operator requalification inspection sample as defined in IP 71111.11B.

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:

- Safe Shutdown Emergency Lighting;
- Secondary Containment Seals; and
- Diesel Generator Ventilation;

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).

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

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

b. Findings

Failure to Evaluate Failures of Individual Safe Shutdown Emergency Lighting Units for Maintenance Preventable Functional Failures and Repetitive Maintenance Preventable Functional Failures

Introduction: The inspectors identified an unresolved item (URI) regarding the licensee's failure to evaluate failures of individual safe shutdown emergency lighting units for maintenance preventable functional failures and repetitive maintenance preventable functional failures in accordance with the licensee's Maintenance Rule implementation procedures.

Description: During review of the licensee's Maintenance Rule program, the inspectors identified that the licensee only used condition monitoring criteria to demonstrate effective maintenance of the plant's safe shutdown lighting system. The licensee limited this system to fewer than 9 condition monitoring failures on 33 emergency lighting battery packs at 264 quarterly testing demands in a rolling 24 month period, which was equivalent to a 3 percent failure rate, to demonstrate effective maintenance of the system. The licensee's definition of a condition monitoring failure for the battery packs is the failure of any emergency lighting battery pack to provide the required illumination. However, the licensee does not have any established reliability performance criteria to monitor for functional failures of this system.

The licensee's process for evaluating condition monitoring failures and reliability failures is different. For reliability failures, step 4.5.5 of ER-AA-310, "Implementation of the Maintenance Rule," directs the licensee to evaluate whether a Maintenance Rule Functional Failure (MRFF) has occurred. If one has, the procedure directs the licensee to determine if the MRFF is a Maintenance Preventable Functional Failure (MPFF), and if so, determine if the MPFF is a Repetitive Maintenance Preventable Functional Failure (RMPFF). If a system has a RMPFF, the procedure directs the licensee to perform an evaluation to determine if maintenance is effective, and if not, the licensee is required to monitor the system under 10 CFR 50.65(a)(1). Conversely, condition monitoring failures are not evaluated for any of these criteria, and therefore do not get evaluated for RMPFFs which require (a)(1) evaluations.

In NUMARC 93-01, "Industry guideline for Monitoring the effectiveness of Maintenance at Nuclear Power Plants," Revision 4A, a MPFF is defined as, "an unintended event or condition such that a SSC within the scope of the rule is not capable of performing its intended function and that should have been prevented by the performance of appropriate maintenance actions by the utility." The inspectors identified that there are areas of the plant that are required for safe shutdown activities that have only one or two safe shutdown emergency lighting units installed in the area. Under the licensee's current Maintenance Rule program, each individual lighting unit failure would be considered a condition monitoring failure and would not be evaluated for MPFFs or RMPFFs. The inspectors need to determine whether a failure of one or more lights in an area such that the area no longer has functional installed safe shutdown lighting should be considered a Functional Failure subject to a MPFF review.

The licensee informed the inspectors that the licensee's condition monitoring criteria was developed based on a memo from the licensee's corporate office (formerly ComEd) that was developed in 1999 in response to a NRC violation at Braidwood Station. The memo recommended that each station implement condition monitoring performance criteria because, "the NRC pointed out that by measuring only reliability, Braidwood was allowing important functional failures to occur without requiring moving the system to (a)(1), and thus not repairing the attendant (a)(1) action plan." In response to this memo, the licensee and other Exelon (ComEd) stations implemented only Condition Monitoring for their emergency lighting. During the inspectors review, however, the inspectors identified that some other Exelon stations, including Braidwood, perform both reliability and condition monitoring. The inspectors need to determine whether it is appropriate for the licensee to perform condition monitoring without reliability monitoring on the Safe Shutdown Emergency Lighting system when step 6 of Attachment 1 to the licensee's procedure ER-AA-310-1003, "Maintenance Rule – Performance Criteria Selection," states, "Condition monitoring augments existing criteria ([Availability Performance Criteria], [Reliability Performance Criteria], Plant Level), where the existing monitoring may be insufficient." The issue is categorized as an URI pending licensee's completion of a revised evaluation and the NRC's review of it
(URI 05000461/20013005-01, Failure to Evaluate Failures of Individual Safe Shutdown Emergency Lighting Units for Maintenance Preventable Functional Failures and Repetitive Maintenance Preventable Functional Failures).

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:

- Inventory control risk key safety function associated with Operation with the Potential to Drain the Reactor Vessel (OPDRV) activities; and
- Emergent work on Source Range Monitor 'C' after finding damaged cable.

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.

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

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

- SX Valve 1SX019A thru-wall leaks at two locations on the reducer weld;
- Reactor Water Cleanup Valve 1G33-F001 as found thrust verification not performed;
- SX cross tie valves;
- Leak tight damaged by heat on Main Steam Isolation Valve 1B21-F028C limit switches; and
- Low Pressure Core Spray discharge header over pressurization and leakage past primary isolation valve.

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 updated safety analysis report 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 were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests 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.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modifications:

- Instrument Air Valve 11A-006 gag device to support 11A175 testing; and
- B Source Range Monitor moved for dry tube replacement.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the Updated Final Safety Analysis Report, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. 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 two temporary modification samples as defined in IP 71111.18.

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:

- Reserve Auxiliary Transformer after maintenance;
- Division 1 Emergency Diesel Generator after electrical governor replacement;
- Division 1 SX after maintenance;
- Main Steam Isolation Valve 1B21-F022A after maintenance;
- A Stand-by Liquid Control Squib Valve on A train after replacement;
- RCIC turbine overseed trip test after maintenance; and
- HPCS Valve 1E22-F012 thrust verification after maintenance.

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post-maintenance testing. The inspectors verified that the post-maintenance testing was performed in accordance with approved procedures; that the procedures contained clear acceptance criteria, which demonstrated operational readiness and that the acceptance criteria was met; that appropriate test instrumentation was used; that the equipment was returned to its operational status following testing; and, that the test documentation was properly evaluated.

In addition, the inspectors reviewed CAP documents associated with post-maintenance testing to verify that identified problems were entered into the licensee's CAP with the appropriate characterization. Selected action requests were reviewed to verify that the corrective actions were appropriate and implemented as scheduled.

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

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the C1R14 refueling outage (RFO), conducted October 7 through October 28, 2013, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the RFO, the inspectors observed portions of the shutdown and cool down processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the outage safety plan for key safety functions and compliance with the applicable TS when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that technical specifications and outage safety plan requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by technical specifications;
- licensee fatigue management, as required by 10 CFR 26, Subpart; I
- refueling activities, including fuel handling;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to refueling outage activities.

This inspection constituted one refueling outage sample as defined in IP 71111.20.

b. Findings

Failure to Implement Requirements of Station Scaffold Installation Procedure

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 licensee's failure to follow station procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal", Revision 8, to obtain engineering approval for seismic scaffolds not complying with specific requirements of approved station procedures during the C1R14 outage. Specifically, seismic scaffolds identified during walkdowns by the inspectors did not meet procedural requirements for required clearances from or tie off to safety-related components and did not have the required engineering evaluation and approval for acceptability.

Description: On October 11, 2013, during an equipment alignment walkdown, the inspectors identified two scaffolds installed in the Division 2 Emergency Diesel Generator room that deviated from the clearance requirements of station procedure NES-MS-04.1, "Seismic Prequalified Scaffolds", Revision 6, documented in IR 01571041. Table 2 of NES-MS-04.1 requires that the horizontal clearance to safety-related equipment for seismic scaffoldings be greater than 6 inches.

The scaffolds were installed around the Division 2 Emergency Diesel Generator. The clearances between some of the scaffold poles and the emergency diesel generator were not within the procedural requirements of greater than 6 inches, which required engineering review and approval. During subsequent walkdowns and inspections in the refueling outage, the inspectors identified additional scaffolds that did not meet the procedural requirements for clearance and engineering review and approval. The inspectors noted the following procedural deficiencies with the scaffolds clearances:

- Scaffold with Tag Number 633 in the refueling building was found with a scaffold post next to a sway strut for a safety-related pipe that deviated from procedural requirements and did not have the required engineering review and approval. This was documented in IR 01574003;
- Scaffold with Tag Number 874 in the drywell was tied off to a safety-related fan support and deviated from procedural requirements and did not have the required engineering review and approval. This was documented in IR 01576792; and
- Scaffolds with Tags 093, 343, 378, 415, and 513 around the main steam isolation valves had multiple deficiencies. One was tied off to a support for safety-related tubing. Several scaffold poles had clearances that deviated from procedural requirements. The scaffolds did not have the required engineering reviews and approvals. This was documented in IR 01576792.

Engineering reviewed these issues and assessed the potential impact on the equipment during a postulated seismic event. In each case it was determined and documented on the individual IRs that there would be no adverse impact affecting equipment functionality in response to a seismic event. Additionally, the licensee completed an apparent cause evaluation that noted that while the scaffold coordinator and superintendents are trained and qualified to determine that scaffolds met Occupational Safety and Health Administration standards, they were not trained in plant systems, safety-related equipment operability or station specific requirements for scaffolds.

Analysis: The inspectors determined that the licensee's failure to follow the station procedure for scaffold installation, inspection and removal was a performance deficiency. Specifically, seismic scaffolds identified during walkdowns by the inspectors did not meet procedural requirements for required clearances from safety-related components and did not have the required engineering evaluation and approval for acceptability. The performance deficiency is more than minor because it was associated with the protection against external factors attribute of the MS cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix G "Shutdown Operations Significance Determination Process," the finding was screened against Attachment 1, Checklist 8 and found to be of very low safety significance (Green) because the finding did not: 1) increase the likelihood of a loss of RCS inventory, 2) degrade the licensee's ability to terminate a leak path or add RCS inventory when needed, 3) significantly degrade the licensee's ability to recover decay heat removal once it is lost, 4) result in one or less safety relief valves being available to establish a heat removal path to the suppression pool with the vessel head on. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the resources component, in that the licensee ensures that

personnel, equipment, procedures and other resources are available and adequate to assure nuclear safety. Specifically, the licensee failed to ensure that the scaffold coordinator and superintendents had the required training to assure nuclear safety while erecting seismic scaffolds. [H.2(b)].

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, appropriate to the circumstance. Station procedure MA-AA-796-024, "Scaffold Installation, Inspection, and Removal," Revision 8, Step 3.2.2 states "As a minimum, seismic scaffolds will comply with specific requirements of approved procedures, unless approved by engineering." Table 2 of procedure NES-MS-04.1, "Seismic Prequalified Scaffolds", Revision 6, requires that the horizontal clearance to safety-related equipment for seismic scaffoldings be greater than 6 inches.

Contrary to the above, on October 11, 2013, the licensee failed to follow the station procedures for scaffold installation and obtain engineering evaluation and approval for seismic scaffolds that did not meet procedural requirements for clearances from safety-related components. Specifically, scaffolds with tag number 093, 343, 378, 415, 513, 633 and 874 had clearances to safety-related equipment that were less than 6 inches and did not have engineering review and approval. The licensee completed the required engineering review and concluded that the scaffolds had no adverse impact affecting equipment functionality. Because this violation is of very low safety significance and was entered into the CAP as IR 01574003, this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000461/2013005-02, Failure to Implement Requirements of Station Scaffold Installation Procedure**).

.2 Forced Outage C1F56 (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities during Unit 1 Forced Outage C1F56, which began on December 8, 2013. Unit 1 was manually scrammed from full power following a 480 volt transformer failure on the 1A Bus for Division 1. The unit was restarted on December 12, 2013, and synchronized to the grid on December 13, 2013. The unit did not return to full power due to a subsequent scram on December 13, 2013.

The inspectors reviewed and evaluated the conduct of outage activities to ensure that the licensee considered risk in developing, planning, and implementing the forced outage schedule. The inspectors observed or reviewed plant equipment configuration and risk management, electrical lineups, startup activities, and identification and resolution of problems associated with the outage.

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

b. Findings

No findings were identified.

.3 Forced Outage C1F57 (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities during Unit 1 Forced Outage C1F57, which began on December 13, 2013. Unit 1 was manually scammed from approximately 23 percent power due to high reactor water level during a feedwater transient. While transferring from the motor driven reactor feed pump to the A turbine driven reactor feed pump the turbine driven pump failed to respond as expected in the automatic mode resulting in the feed water transient. The unit was restarted on December 14, 2013, and the unit returned to full power on December 19, 2013.

The inspectors reviewed and evaluated the conduct of outage activities to ensure that the licensee considered risk in developing, planning, and implementing the forced outage schedule. The inspectors observed or reviewed plant equipment configuration and risk management, electrical lineups, startup activities, and identification and resolution of problems associated with the outage.

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

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 9861.02D017, "LLRT [Local Leak Rate Test] Data Sheet for 1MC043 – Reactor Core Isolation Cooling Steam Supply" (Containment Isolation Valve Leak Test);
- CPS 9861.04D001, "Main Steam Isolation Valve A LLRT Data Sheet" (Containment Isolation Valve Leak Test);
- CPS 9080.21, "Division 1 Diesel Generator Integrated Test" (In-Service Test);
- CPS 9861.02D013, "LLRT Date Sheet for 1MC035 - High Pressure Core Spray Injection" (Containment Isolation Valve Leak Test);
- CPS 9861.05D003, "High Pressure Core Spray Leak Rate Test" (In-Service Test); and
- CPS 9434.03, "ATWS [Anticipated Transient Without Scram] Logic System Functional" (Routine Test).

The inspectors observed selected portions of the test activities to verify that the testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify that equipment performance was

consistent with safety analysis and design basis assumptions, and that testing acceptance criteria were satisfied.

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

This inspection constituted one routine surveillance testing sample, two in-service testing samples, and three containment isolation valve samples as defined in IP 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The Office of Nuclear Security and Incident Response headquarters' staff performed an in-office review of the latest revisions to the Emergency Plan and various Emergency Plan Implementing Procedures (EPIPs) as listed in the Attachment to this report.

The licensee transmitted the EPIP revisions to the NRC pursuant to the requirements of 10 CFR Part 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment to this report.

This emergency action level and emergency plan change inspection constituted one sample as defined in IP 71114.04.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted one complete sample as defined in IP 71124.01.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of radiation protection program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the

results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements to verify conditions.

The inspectors selected the following radiologically risk significant work activities that involved exposure to radiation:

- C1R14 Reactor Cavity Drain Down
- C1R14 Reactor Cavity Dryer Installation
- C1R14 Drywell ISI Bio-shield; and

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if hazards were properly identified, including the following:

- identification of hot particles;
- the presence of alpha emitters;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials (This evaluation may include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and
- severe radiation field dose gradients that can result in non-uniform exposures of the body.

The inspectors observed work in potential airborne areas and evaluated whether the air samples were representative of the breathing air zone. The inspectors evaluated

whether continuous air monitors were located in areas with low background to minimize false alarms and were representative of actual work areas. The inspectors evaluated the licensee's program for monitoring levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904, "Labeling Containers," or met the requirements of 10 CFR 20.1905(g), "Exemptions To Labeling Requirements."

The inspectors reviewed the following radiation work permits used to access high radiation areas and evaluated the specified work control instructions or control barriers:

- C1R14 Reactor Cavity Drain Down
- C1R14 Reactor Cavity Dryer Installation
- C1R14 Drywell ISI Bio-shield

For these radiation work permits, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each radiation work permit were clearly identified. The inspectors evaluated whether electronic personal dosimeter alarm set-points were in conformance with survey indications and plant policy.

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiological control area and inspected the methods used for

control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicates the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee established a *de facto* "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the following radiation work permits for work within airborne radioactivity areas with the potential for individual worker internal exposures:

- C1R14 Reactor Cavity Drain Down;

- C1R14 Reactor Cavity Dryer Installation; and
- C1R14 Drywell ISI Bio-shield.

For these radiation work permits, the inspectors evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high radiation work areas with significant dose rate gradients.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (i.e., nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high radiation areas and very high radiation areas to verify conformance with the occupational performance indicator.

b. Findings

No findings were identified.

.6 Risk-Significant High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk, high radiation areas and very high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that have the potential to become very high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very high radiation areas and areas with the potential to become a very high radiation area to ensure that an individual was not able to gain unauthorized access to the very high radiation area.

b. Findings

No findings were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the radiation work permit controls/limits in place, and whether their performance reflected the level of radiological hazards present.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems

documented by the licensee that involve radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)

This inspection constituted one complete sample as defined in IP 71124.02.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures and source term measurements.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures as-low-as-reasonably-achievable (ALARA), which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected the following work activities of the highest exposure significance.

- C1R13 ISI Examinations (Bio-shield);
- C1R14 ISI Examinations (Bio-shield);
- C1R14 Drywell Scaffolding;
- C1R14 Drywell ISI Bio-shield Support Work;
- C1R13 Refuel Floor Disassembly/Reassembly Floor Work; and
- C1R14 Refuel Floor Disassembly/Reassembly Floor Work.

The inspectors reviewed ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features, considered alternate mitigation features, and defined reasonable

dose goals. The inspectors evaluated whether the licensee's ALARA assessment has taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote technologies (e.g., tele dosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and radiation work permit documents.

The inspectors compared the results achieved (dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity and failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's CAP.

b. Findings

Failure to Maintain Radiation Exposure ALARA During C1R13

Introduction: A finding of very low safety significance (Green) was self-revealed due to the licensee having unplanned and unintended occupational collective radiation dose because of deficiencies in the licensee's Radiological Work Planning and Work Execution Program. Specifically, the licensee failed to properly incorporate ALARA strategies and insights while planning and executing work activity during the C1R13 refueling outage. These were the ISI examinations performed inside the bio-shield. The initial dose estimate for this activity was 42.521 person-rem. However, 69.931 person-rem of dose was actually received. The dose overage was 28.410 person-rem, which was 68 percent higher than the initial estimate. This was the result of poor radiological planning and work execution of this task.

Description: During the C1R13 refueling outage, numerous work tasks were performed. One of these tasks was to perform ISI examinations inside the bio-shield. Work commenced on or about December 1, 2011. Beginning on December 5, 2011, dose received significantly exceeded daily estimates for the task. The licensee performed a work-in-progress (WIP) review on December 8, 2011. The dose estimate for the task was revised to 57.796 person-rem. A second WIP review was performed on December 13, 2011, further raising the dose estimate for this task to 70.430 person-rem. The task finished at 69.931 person-rem. On January 20, 2012, the licensee performed an ALARA post-job review for this task. In the WIPs and the post-job evaluation, the licensee identified numerous weaknesses in job planning and execution. These included the lack of coordination for support groups prior to inspections, inadequate walkdowns, incorrect time estimates to set up and perform inspections, and inadequate allowances to perform radiological surveys. The licensee entered this issue into their CAP as IR 01593794 and incorporated the lessons learned into their outage planning.

Analysis: The failure to appropriately plan and coordinate outage activities, together with the failure to properly incorporate ALARA strategies or insights while planning and executing ISI examinations inside the bio-shield during the C1R13 refueling outage, was a performance deficiency that was within the licensee's ability to control and should have been prevented. The finding was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone. This issue was more than minor because it affected the cornerstone objective of ensuring the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Additionally, the finding is very similar to IMC 0612, Appendix E, "Examples of Minor Issues," Example 6.i. This example provides guidance that an issue is not minor if the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. The inspectors determined that this finding was of very low safety significance in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." This was a finding in the ALARA planning and work controls, but not greater than 240 person-rem/unit for a boiling-water reactor. CPS's 3-year rolling average collective was less than 240 person-rem/unit. This finding did not have a cross-cutting aspect since ALARA planning and execution improved during the subsequent C1R14 refueling outage.

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. Because this finding does not involve a violation and is of very low safety significance and was entered into the licensee's CAP as IR 01593794, it is identified as a finding (**FIN 05000461/2013005-03, Failure to Maintain Radiation Exposure ALARA During C1R13**).

.3 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors reviewed the assumptions and basis (including dose rate and man-hour estimates) for the current annual collective exposure estimate for reasonable accuracy for select ALARA work packages. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.

The inspectors evaluated whether the licensee established measures to track, trend, and, if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

.4 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

.5 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice (e.g., workers are familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers are not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

.6 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

CORNERSTONES: PUBLIC RADIATION SAFETY AND OCCUPATIONAL RADIATION SAFETY

.1 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Specific Activity Performance Indicator (PI) for CPS for the period from the fourth quarter 2012 through the third quarter 2013. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's RCS chemistry samples, technical specification requirements, issue reports, 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.

This inspection constituted one RCS specific activity sample as defined in IP 71151.

b. Findings

No findings were identified.

.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Leakage PI for the period from the fourth quarter 2012 through the third quarter 2013 to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, issue reports, event reports and NRC Integrated Inspection Reports for the period of October 1, 2012 through September 31, 2013, 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 constituted one RCS leakage sample as defined in IP 71151.

b. Findings

No findings were identified.

.3 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 2012 through the third

quarter 2013. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 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.

The inspectors reviewed a licensee-identified issue that occurred on March 3, 2013. Specifically, the inspectors reviewed IR 01482741, "Key Improperly Issued." The inspectors determined that a violation of TS 5.7.2 occurred because a key had been issued to a non-qualified individual for a locked high radiation area (LHRA). The licensee previously did not report this as a PI occurrence. This performance deficiency was determined by the inspectors to be minor due to the fact that while the key was issued to a non-qualified radiation protection support person, that individual remained in close proximity to a qualified radiation protection supervisor during the job evolution. Thus, control of the LHRA was not compromised. Upon further review, prompted by the inspector, the licensee determined that this issue was an occurrence of the Occupational Exposure Control Effectiveness PI in accordance with NEI Document 99-02. The licensee entered the missed PI occurrence into their CAP as IR 01593036. This will result in the change for this PI from zero to one occurrence. This change will not result in a change in regulatory significance to this PI.

This inspection constituted one Occupational Exposure Control Effectiveness sample as defined in IP 71151.

b. Findings

No findings of significance were identified. However, the inspectors identified a minor violation of 10 CFR 50.9 "Completeness and Accuracy of Information" for a not reported Occupational Radiation Safety PI occurrence on March 3, 2013 (IR 01593036).

.4 Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences PI for the period from the fourth quarter 2012 through the third quarter 2013. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 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 Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences sample as defined in IP 71151.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.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. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

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

a. Inspection Scope

The inspectors reviewed repetitive or closely related issues documented in the licensee's CAP to look for trends not previously identified. This included a review of the licensee's quarterly trend coding and analysis reports to assess the effectiveness of the licensee's trending process. The inspectors also reviewed action requests regarding licensee-identified potential trends to verify that corrective actions were effective in addressing the trends and implemented in a timely manner commensurate with the significance.

b. Assessment and Observations

(1) Overall Effectiveness of Trending Program

The inspectors determined that the licensee's trending program was generally effective at identifying, monitoring, and correcting adverse performance trends. The inspectors reviewed several common cause evaluations performed by the licensee to evaluate potential adverse performance and equipment trends. In general, these evaluations were performed well and identified appropriate corrective actions to address adverse trends that were identified. The inspectors did not identify any new adverse trends that were not already identified by the inspectors or the licensee and entered into the licensee's CAP.

(2) Continuing Adverse Trend in Evaluating Degraded/Nonconforming Plant Conditions for Operability, Functionality and/or Reportability

The inspectors noted that an adverse trend has continued involving the licensee's evaluation of degraded/nonconforming plant conditions for operability, functionality and/or reportability. The inspectors first identified and documented this adverse trend five years ago and have since documented several findings related to this adverse performance trend. In addition, past semi-annual trend reviews documented in inspection reports from 2009 through 2012 discussed examples of deficiencies with the licensee's evaluations when degraded or nonconforming conditions were discovered. The licensee's Nuclear Oversight organization has also noted this adverse performance trend in the past and documented examples of it.

The inspectors identified one finding involving failure to document the basis that a reasonable expectation of operability existed after an immediate operability determination and a minor violation of TS 5.4.1, "Procedures," for providing an

incomplete operability determination during this semi-annual review period. Examples the inspectors identified during this review period included:

- IR 01587374 – The inspectors identified that the licensee failed to document the basis that a reasonable expectation of operability existed after an immediate operability determination. Specifically, after the control room received a report of a crack on the after cooler ducting of the Division 2 Emergency Diesel Generator the licensee failed to document their basis that a reasonable expectation of operability existed for the Division 2 Emergency Diesel Generator. This issue was documented as a non-cited violation of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings in NRC Inspection Report 05000461/2013004; and
- IR 01593809 – The inspectors identified that the licensee had failed to provide a complete operability basis in accordance with station procedure OP-AA-108-115, “Operability Determinations”, since Section 4.1 was not followed to provide and document a complete operability determination for the low pressure core spray system after determining an overpressure condition existed in the discharge header piping. 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. Additional review and documentation was prompted by the NRC resident staff. This issue was determined to be a minor violation of TS 5.4.1.

Due to the fact that examples of this adverse performance trend continue to be identified and they have been entered into the licensee’s CAP, and that separate findings have been documented when an inadequate evaluation has risen to a more than minor significance threshold, no additional finding of significance was identified at this time.

This inspection constituted one semi-annual trend review inspection sample as defined in IP 71152.

b. Findings

No findings were identified.

.4 Selected Issue Follow-Up Inspection: IR 01563609, "Fuel Building Ventilation Tripped Off - EOP 8 Entry Required"

a. Inspection Scope

During a review of items entered in the licensee’s CAP, the inspectors recognized a corrective action item documenting an entry into Emergency Operating Procedures due to the Fuel Building Ventilation System tripping off on September 25, 2013.

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

b. Findings

Failure to Identify Embedded Operator Challenge

Introduction: Inspectors identified a finding of very low safety significance associated with the licensee's failure to identify an operator challenge associated with deficiencies with its VF system. The licensee proceduralized significant compensatory actions necessary in order to comply with TS and avoid entry into station emergency operating procedures but failed to recognize that these actions provided an obstacle to normal plant operation.

Description: On September 25, 2013, the licensee entered its Emergency Operating Procedure 8, "Secondary Containment Control," due to the differential pressure of the secondary containment relative to outside pressure rising greater than zero inches of water (positive pressure). The cause of the pressure rise was operation of the inner railroad bay door which created a pressure transient and an automatic trip of the VF system. The licensee was able to re-start the VF system after closing the inner railroad bay and personnel doors. These actions enabled operators to establish greater than 0.25 in water vacuum within the fuel building and declare secondary containment operable.

After the event, the licensee determined that the VF system had functioned as designed because the VF system fans had tripped within their established tolerance of the pressure bands for the corresponding set points. The licensee documented this issue in IR 1563609 and revised station procedure CPS 3404.01, "Fuel Building HVAC [Heating, Ventilation, and Air Conditioning] (VF)." The licensee made revisions 12b through 12d within three days and a final revision on October 8, 2013. These revisions added additional operator compensatory actions when opening secondary containment doors. These compensatory actions included bypassing the VF system high differential pressure trip, opening personnel doors to equalize differential pressures, taking manual control of the system supply fans, defeating the railroad bay door interlocks by removing fuses, and pre-briefing emergency actions necessary to comply with TS should the system trip off while opening a secondary containment door. Some of these compensatory actions had been understood by operators to be necessary in the past. However, these actions had never been incorporated into station procedures nor were they ever identified as system deficiencies and documented as such in an IR.

After the procedure was revised, IR 01564861 documented a personnel safety issue associated with the additional compensatory actions. Operators were procedurally required to open a personnel door which was subject to a high differential pressure. The door was difficult to maintain control over and had the potential to cause a hand injury while opening it. The licensee identified and addressed the immediate safety concern; however it never identified any of these actions as a potential operator challenge.

Licensee procedure OP-AA-102-103, "Operator Work-Around Program," defines an operator work-around (OWA) as an equipment or program deficiency that provides an obstacle to safe plant operations by requiring operations personnel to take compensatory actions to comply with design requirements. If compensatory actions have been proceduralized, but were not intended as part of the equipment operating design, the issue should be considered an operator work-around. An operator challenge is defined similarly to a work-around, the difference being that a challenge provides an

obstacle to normal safe plant operation. Step 4.1 of this procedure requires that potential operator challenges be identified via the CAP. Step 4.1.2 requires an action request be written for all equipment deficiencies.

Per the licensee's design criteria document DC-VF-01-CP, "Fuel Building HVAC System Design Criteria," Revision 4, the fuel building HVAC system shall maintain a negative pressure (-0.25 in H₂O) inside the fuel building with respect to outside ambient. The CPS Updated Safety Analysis Report Section 9.4.2.2 states that VF maintains the fuel building at a minimum of 0.25 inch H₂O negative pressure with respect to outdoors during all station normal operating conditions. The ability to maintain the negative pressure at greater than or equal to this parameter value serves to ensure that the secondary containment boundary is sufficiently leak tight to preclude exfiltration under expected wind conditions. Neither license document references the opening of secondary containment doors as a condition necessary for performing the systems design function. In fact, opening of fuel building rail road bay doors is a common occurrence and is performed frequently prior to and after refueling outages. The operator compensatory actions have become increasingly necessary over time in order to comply with VF system design requirements due to degrading system performance.

After IR 1563609 had been closed without identifying an operator challenge and after prompting from inspectors, the licensee wrote IR 01589104 which documented the inspector's concern of an operator challenge. An action was created on November 27, 2013, to present this issue to the operator work-around challenge board. This occurred two months after four separate revisions of the procedure and after numerous performances of the newly proceduralized compensatory actions. On December 30, 2013, the operator work-around challenge board concluded that this issue met the criteria for an operator challenge based on the fact that it added additional operator burden to respond to normal operational needs.

Analysis: The inspectors determined that the licensee's failure to identify an embedded operator challenge was a performance deficiency. Specifically, the licensee failed to identify that implementing additional operator compensatory actions required when opening secondary containment doors is an operator challenge and correcting VF system deficiencies is required. The performance deficiency is more than minor because it was associated with SSC and Barrier Performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of ensuring that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process (SDP) for Findings At-Power" the finding was screened against Exhibit 3 Section C and found to be of very low safety significance (Green) because the finding represented only a degradation of the radiological barrier function provided for the spent fuel pool building. The inspectors concluded that this finding affected the cross-cutting aspect of problem identification and resolution. Specifically, the licensee failed to implement its CAP with a low threshold for identifying issues and did not identify this burden to operators completely, accurately, and in a timely manner commensurate with its safety significance. [P.1(a)]

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. The finding was entered into the licensee's CAP as IR 01589104 (**FIN 05000461/2013005-04, Failure to Identify Embedded Operator Challenge**).

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

.1 (Closed) Licensee Event Report (LER) 05000461/2013-001-00, "Inadequate Risk Identification Results in Loss of Safety Function"

a. Inspection Scope

The inspectors reviewed LER 05000461/2013-001-00 and the licensee's equipment apparent cause evaluation for the associated event to assess the accuracy of the LER, thoroughness of the licensee's evaluation of the event, appropriateness of corrective actions, and any non-compliance with regulatory requirements.

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

b. Findings

(1) Failure to Assess and Manage Risk Associated with the Performance of Surveillance Testing on Average Power Range Monitors (APRMs)

Introduction: The inspectors reviewed a self-revealing non-cited violation of 10 CFR 50.65(a)(4) for failing to manage risk when the Division 4 NSPS inverter unexpectedly transferred from its normal DC power source to its alternate AC power source during a surveillance test. Specifically, the installed operational barrier failed to protect a fuse block when a test cable connector was inadvertently dropped causing a momentary electrical short and resulting in the inverter to transfer power sources.

Description: On February 18, 2013, control room operators received an alarm for the Division 4 NSPS inverter transferring from its normal DC power source to its alternate AC power source. At the time, maintenance personnel were performing surveillance testing in accordance with CPS 9431.17, "Average Power Range Monitor Flow Biased/Neutron Flux Response Time Test," for the 'D' APRM. The technician performing the surveillance test dropped a test cable that contacted a fuse block in a control room cabinet resulting in a momentary short to ground. The momentary short caused the Division 4 NSPS electrical bus to transfer to its alternate power source.

Before the surveillance test was started, a maintenance supervisor and two technicians looked inside of the cabinet to assess the risk associated with the activity and identified the need for an operational barrier located over the fuse block to mitigate the risk of an electrical short. The technicians installed a temporary protective cover over the fuse block that did not fully cover the bottom of the fuse block. This allowed the dropped cable connector to come into contact with the bottom edge of the fuse block.

According to TS Bases 3.8.7, "Inverters – Operating," an NSPS inverter is inoperable when its associated bus is not powered by normal DC power source. In accordance with TS 3.8.7, Action C.1, with the Division 4 NSPS inverter inoperable, the control room operators immediately declared the HPCS system inoperable. The HPCS system was inoperable for about 6 hours while the operators restored the Division 4 NSPS bus to its normal DC power source.

The licensee determined that the apparent cause was inadequate risk identification related to pendulum motion of the test connector during jobsite assessment and set up. The supervisor and technicians had identified the potential shorting risk of the fuse block in the cabinet, but the temporary protective cover was not adequate to cover the underside of the fuse block. The inspectors therefore concluded that while the licensee assessed the risk associated with the surveillance testing activity to include potential shorting of the fuse block, it did not adequately manage the risk of the activity by installing a temporary protective cover that fully covered the bottom of the fuse block.

The licensee performed a quick human performance investigation that determined that the technicians only verified the robust barrier installation from the top and the side and not from the bottom at the floor level. The technicians failed to use human performance tools or verification practices to ensure that the temporary protective cover fully covered the bottom of the fuse block.

Analysis: The inspectors determined that the licensee's failure to adequately manage the risk associated with performance of surveillance testing for APRM 'D' was a performance deficiency. Specifically, the installed operational barrier failed to protect a fuse block when a test cable connector was inadvertently dropped causing a momentary electrical short resulting the inverter to transfer power sources. The performance deficiency is more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The performance deficiency involved the licensee's assessment and management of risk associated with performing maintenance in accordance with 10 CFR 50.65(a)(4); therefore the inspectors used IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix K "Maintenance Risk Assessment and Risk Management Significance Determination Process" and determined that a detailed risk evaluation would be required since the issue represented an actual loss of safety function of a system.

The Region III SRA completed a detailed risk evaluation of the HPCS inoperability using the NRC's SPAR model for CPS, Version 8.17 and SAPHIRE Version 8.09 to calculate an ICDPD for the unevaluated condition. For this event, the HPCS system was inoperable, but available during the approximate 6-hour time that the Division 4 inverter and HPCS were inoperable. The SRA ran the SPAR model conservatively assuming that HPCS was unavailable during the 6-hour time. The result was an ICDPD of less than 2E-08/year. The dominant core damage sequence involved a weather-related loss of offsite power initiating event, failure of emergency power (i.e., station blackout), failure of HPCS, and failure of reactor core isolation cooling system after its initial success, failure to depressurize for low pressure injection, and failure to recover AC power in 4 hours. In accordance with IMC 0609, Appendix K, because the ICDPD was not greater than 1E-06/year, the finding was determined to be of very low safety significance (i.e., Green).

The finding was determined to have cross-cutting aspect in the area of human performance, associated with the work practices component, in that personnel work practices are used commensurate with the risk of the assigned task, such that work activities are performed safely. Specifically, the technicians did not perform adequate self or peer checks after installation of the barrier to ensure the barrier would provide protection from shorting. [H.4(a)]

Enforcement: 10 CFR 50.65(a)(4) requires, in part, that before performing maintenance activities (including but not limited to surveillance testing, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activity.

Contrary to the above, on February 18, 2013, the license failed to manage the risk associated with surveillance testing for APRM 'D', in that, although a risk assessment had been performed for the maintenance activity, including the need for the installation of a temporary protective cover over a fuse block intended to prevent electrical shorting during the installation of test cables, the temporary cover was inadequate since it did not cover the bottom of the fuse block. Consequently, a test cable came in contact with a fuse block staple jumper at the bottom of the fuse block and momentarily shorted the staple jumper, through the test cable and test box, to ground. This resulted in the Division 4 NSPS bus transferring to its alternate power source and the loss of safety function of the HPCS system.

Corrective actions following this event included: (1) a stand-down with instrument maintenance craftsmen to discuss the event and lessons learned, (2) changes to the licensee's risk/hazards assessment process to include a checklist designed to aid in challenging jobsite conditions, (3) conduct of paired observations by maintenance department managers on use of the checklist, and (4) a case study with the maintenance shops using this event to highlight determining risk perception and robust protective barriers.

Because this violation is of very low safety significance and was entered into the CAP as issue request IR 01476647, this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000461/2013005-05, Failure to Assess and Manage Risk Associated with the Performance of Surveillance Testing on Average Power Range Monitors**).

.2 (Closed) LER 05000461/2013-006-00, "Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 1"

a. Inspection Scope

Between October 13, 2013 and October 27, 2013, CPS performed OPDRV activities while in Mode 5 without an operable secondary containment. An OPDRV is an activity that could result in the draining or siphoning of the reactor pressure vessel water level below the top of fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel. Secondary containment is required by TS 3.6.4.1 to be operable during OPDRV. The required action for this specification is to suspend OPDRV operations. Therefore, entering the OPDRV without establishing secondary containment integrity was considered a condition prohibited by TS as defined by 10 CFR 50.73(a)(2)(i)(B).

The NRC issued Enforcement Guidance Memorandum (EGM) 11-003, Revision 2, on December 13, 2013, to provide guidance on how to disposition boiling water reactor licensee noncompliance with TS containment requirements during OPDRV operations. The NRC considers enforcement discretion related to secondary containment operability during Mode 5 OPDRV activities appropriate because the associated interim actions necessary to receive the discretion ensure an adequate level of safety by requiring licensees' immediate actions to (1) adhere to the NRC plain language meaning of

OPDRV activities, (2) meet the requirements which specify the minimum makeup flow rate and water inventory based on OPDRV activities with long drain down times, (3) ensure that adequate defense in depth is maintained to minimize the potential for the release of fission products with secondary containment not operable by (a) monitoring RPV level to identify the onset of a loss of inventory event, (b) maintaining the capability to isolate the potential leakage paths, (c) prohibiting Mode 4 (cold shutdown) OPDRV activities, and (d) prohibiting movement of irradiated fuel with the spent fuel storage pool gates removed in Mode 5, and (4) ensure that licensees follow all other Mode 5 TS requirements for OPDRV activities.

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

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

Technical Specification 3.6.4.1 requires, in part, that secondary containment shall be operable during OPDRV. Technical Specification 3.6.4.1, Condition C, requires the licensee to initiate action to suspend OPDRV immediately when secondary containment is inoperable. Contrary to the above, between October 13, 2013, and October 27, 2013, CPS performed OPDRV activities while in Mode 5 without an operable secondary containment. Specifically, the station used performed the following OPDRV activities without an operable secondary containment:

- Reactor Water Cleanup (RWCU) suction line local leak rate testing (LLRT) and subsequent system fill
- Shifting reactor pressure vessel level control to Residual Heat Removal System
- Hydraulic Control Unit Riser Vent Valve 1C11-1F101 replacement for mechanism 32-53
- Source Range Monitor B dry tube replacement

- Control Rod Drive mechanism exchange (de-torque to re-torque)
- Residual Heat Removal Shutdown Cooling Valves, 1E12F008 and 1E12F009, Category A leak rate testing and
- LLRTS and subsequent system fill
- Startup of RWCU pump to support flushing and recovery of RWCU Heat Exchanger A
- Startup of Residual Heat Removal A for shutdown cooling operations

Because the violation occurred during the discretion period described in EGM 11-003, Revision 2, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation.

In accordance with EGM 11-003, Revision 2, each licensee that receives discretion must submit a license amendment request within 4 months of the NRC staff's publication in the Federal Register of the notice of availability for a generic change to the standard TS to provide more clarity to the term OPDRV. The inspectors observed that CPS is tracking the need to submit a license amendment request in its CAP as IR 1273398. LER 05000461/2013-006-00 is now closed.

40A6 Management Meetings

.1 Exit Meeting Summary

On January 16, 2013, the inspectors presented the inspection results to Mr. K. Taber and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of in-service inspection with Plant Manager, Mr. T.R. Stoner, on October 24, 2013.
- The results for the areas of radiological hazard assessment and exposure controls inspection, occupational as-low-as-reasonably-achievable (ALARA) planning and controls inspection, and RCS specific activity and RETS/ODCM Radiological Effluent Occurrences PI verification with B. Taber, Site Vice President, on October 25, 2013.
- The results of radiological hazard assessment and exposure controls inspection, occupational ALARA planning and controls inspection, and occupational exposure control effectiveness performance indicator verification with Mr. N. Hightower, Radiation Protection Manager, on December 6, 2013.
- The results of the licensed operator requalification biennial written examination with Mr. R. Bedford, Licensed Operator Requalification Lead Instructor, via telephone on December 16, 2013.

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.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Clinton TS Limiting Condition for Operation 3.4.11 requires that RCS pressure, temperature, heat up and cool down rates, and the recirculation loop temperature requirements shall be maintained within limits at all times. Contrary to the above, on October 28, 2013, during reactor startup from refueling outage C1R14, main control room operator logs showed a reactor coolant heat up rate of greater than 100 degrees Fahrenheit per hour. The shift manager was notified of this trend when the coolant temperature had increased by about 111 degrees in one hour. At that time the shift manager made an incorrect interpretation of TSs that the LCO 3.4.11 heat up rate limit was based solely on the rate of change of the metal temperatures and not the actual RCS temperature. Technical Specifications 3.4.11 Figure 3.4.11-3 for RPV heat up/cool down limits states the heat up/cool down of reactor coolant limit is less than 100 degrees/hour. The limit was exceeded without the Limiting Conditions for Operation actions being met in the time required. The licensee identified this violation during an operations review of the CPS 9000.06D001 procedure log data and documented the issue in IR 01580123. Subsequently, on November 2, 2013, the licensee performed an evaluation of the RCS in accordance with TS 3.4.11 A.2 which determined that the RCS was acceptable for continued operation. The issue was more than minor because the performance deficiency, if left uncorrected, could be reasonably viewed as a precursor to a more significant event. The finding screened as having very low safety significance (Green) because it only represented a degradation of the RCS barrier since further evaluation determined that the RCS was acceptable for continued operation.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Anthony, Corporate NDE Services Manager
M. Baig, Engineering Programs, ISI
R. Bair, Chemistry Manager
K. Baker, Regulatory Assurance Manager
R. Bedford, Licensed Operator Requalification Lead
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. Frantz, Regulatory Assurance
M. Friedman, Radiation Protection Operations Manager
N. Hightower, Radiation Protection Manager
T. Krawcyk, Shift Operations Superintendent
K. Leffel, Operations Support Manager
D. Kemper, Operations Director
S. Kowalski, Senior Manager Design Engineering
M. Mayer, Acting Security Manager
S. Mohundro, Engineering Programs Manager
W. Padgett, Work Management
C. Propst, Nuclear Oversight Manager
D. Reoch, Radiation Protection General Supervisor
F. Sarantakos, Engineering Programs
R. Schenck, Work Management Director
D. Shelton, Operations Services Manager
D. Smith, Design Engineering
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

C. Phillips, Acting Chief, Reactor Projects Branch 1
W. Schaup, Clinton Senior Resident Inspector
D. Lords, Clinton Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000461/2013005-01	URI	Failure to Evaluate Failures of Individual Safe Shutdown Emergency Lighting Units for Maintenance Preventable Functional Failures and Repetitive Maintenance Preventable Functional Failures (Section 1R12)
05000461/2013005-02	NCV	Failure to Implement Requirements of Station Scaffold Installation Procedure (Section 1R20)
05000461/2013-005-03	FIN	Failure to Maintain Radiation Exposure ALARA During 1R13 (Section 2RS2)
05000461/2013005-04	FIN	Failure to Identify Embedded Operator Challenge (Section 4OA2)
05000461/2013005-05	NCV	Failure to Assess and Manage Risk Associated with the Performance of Surveillance Testing on Average Power Range Monitors (Section 4OA3)

Closed

05000461/2013005-02	NCV	Failure to Implement Requirements of Station Scaffold Installation Procedure (Section 1R20)
05000461/2013005-03	FIN	Failure to Maintain Radiation Exposure ALARA During 1R13 (Section 2RS2)
05000461/2013005-04	FIN	Failure to Identify Embedded Operator Challenge (Section 4OA2)
05000461/2013005-05	NCV	Failure to Assess and Manage Risk Associated with the Performance of Surveillance Testing on Average Power Range Monitors (Section 4OA3)
05000461/2013-001-01	LER	Inadequate Risk Identification Results in Loss of Safety Function (Section 4OA3)
05000461/2013-006-00	LER	Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 1 (Section 4OA3)

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 or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R04 Equipment Alignment

- CPS 3506.01V001, Diesel Generator and Support Systems Valve Lineup, Revision 13a
- CPS 3506.01V002, Diesel Generator and Support Systems Instrument Valve Lineup, Revision 11b
- CPS 3506.01E001, Diesel Generator and Support Systems Instrument Electrical Lineup, Revision 18c
- CPS 3505.03V002, Emergency Reserve Auxiliary Transformer Static Variable Compensator Cooling System Valve Lineup, Revision 1
- CPS 3505.03E002, Emergency Reserve Auxiliary Transformer Static Variable Compensator Electrical Lineup, Revision 1
- CPS 3211.01V001, Shutdown Service Water Valve Lineup, Revision 28b
- CPS 3211.01V002, Shutdown Service Water instrument Valve Lineup, Revision 9
- CPS 3211.01E001, Shutdown Service Water Electrical Lineup, Revision 18a
- CPS 3312.02, "Alternate Shutdown Cooling (A-SDC) Methods," Revision 9a
- CPS 3317.01, "Fuel Pool Cooling and Cleanup (FC)," Revision 30a
- CPS 3317.01V001, "Fuel Pool Cooling and Cleanup Valve Lineup," Revision 12
- CPS 3317.01E001, "Fuel Pool Cooling and Cleanup Electrical Lineup," Revision 13
- CPS 4411.03, "Injection/Flooding Sources," Revision 10
- CPS 3822.04C003, "Quarterly B.5.b. Equipment Checklist," Revision 6
- CPS 4303.01P003, "Spent Fuel Pool Makeup from Suppression Pool," Revision 1a
- ECR 369773, "RCIC Flow Loop Data Out of Specification, IR 324551"
- M05-1079, "Reactor Core Isolation Cooling (RCIC)(RI)," Sheet 002
- CPS 3310.01E001, "Reactor Core Isolation Cooling Electrical Lineup," Revision 16
- CPS 3310.01V001, "Reactor Core Isolation Cooling Valve Lineup," Revision 12e
- CPS 3310.01V001, "Reactor Core Isolation Cooling Valve Lineup," Revision 9e
- AR 01556195, "1E51R606 – RCIC Flow Meter Indicates Flow With Pump Shutdown"

1R05 Fire Protection

- Clinton Power Station Updated Final Safety Analysis Report, Appendix E, Fire Protection Evaluation Report – Clinton Power Station Unit 1, Revision 15
- Clinton Power Station Updated Final Safety Analysis Report, Appendix F, Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1, Revision 15
- OP-AA-201-009, Control of Transient Combustible Material, Revision 11
- CPS 1893.04M502, 712 Diesel Generator: Division 2 Diesel Fuel Tank Room Prefire Plan Revision 6
- CPS 1893.04M512, 737 Diesel Generator: Division 2 Diesel Generator and Day Tank Room Prefire Plan, Revision 7
- OP-AA-201-003, Fire Drill Performance, Revision 12
- Fire Drill Scenario No.: 2013-20
- CPS 1893.04M370, 825 Control: Control Room HVAC Prefire Plan
- Clinton Power Station Updated Final Safety Analysis Report, Appendix E, "Fire Protection Evaluation Report – Clinton Power Station Unit 1," Revision 15

- Clinton Power Station Updated Final Safety Analysis Report, Appendix F, "Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1," Revision 15
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 11
- CPS 1893.04M803, "699' Screen House: 'A' (North) Fire Pump Room Prefire Plan," Revision 6
- CPS 1893.04M600, "702' Radwaste: Basement (South) Prefire Plan," Revision 5

1R06 Flooding Protection Measures

- ER-AA-3003, "Cable Condition Monitoring Program," Revision 0
- AR 00736312, "NCV 2007008-01 Continuous Submerged Cables Design Deficiency"
- AR 00992326, "Rusty Cable Support in Division 2 Safety Related Manhole 0SHC-B"
- AR 00991384, "Tritium at MPT Electric Vault Drain 1APB Above Background"

1R08 Inservice Inspection Activities

- GEH-PDI-UT-1, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds, Revision 8
- GEH-UT-247, Procedure for Phased Array Ultrasonic Examination of Dissimilar Metal Welds, Revision 2
- GEH-UT-300, Procedure for Manual Examination of Reactor Vessel Assembly Welds in Accordance with PDI, Revision 12
- ER-AA-335-003, Magnetic Particle (MT) Examination, Revision 5
- ER-AA-335-002, Liquid Penetrant (PT) Examination, Revision 8
- ER-AA-335-1008, Code Acceptance and Recording Criteria For Nondestructive (NDE) Surface Examination, Revision 3
- CC-AA-501, Exelon Nuclear Welding Program, Revision 1
- CC-AA-501-1003, Exelon Nuclear Welding Program Visual Weld Acceptance Criteria, Revision 3
- CC-CL-501-1027, Exelon Nuclear Welding Program Completing the Weld Data Sheet, Revision 2
- WPS 1-1-GTSM-PWHT-1, ASME Welding Procedure Specification Record (QW-482), Revision 1
- AR01292764, C1R13LL-RPV Nozzle ISI Exam Durations, November 20, 2011
- AR01341526, C1R14-Perform Isi On Class 1, 2, and 3 Components, March 15, 2012
- AR01575454, Pinhole Sized Leak Downstream of 1SX019A, October 23, 2013

1R11 Licensed Operator Requalification Program

- OP-AA-102-106, Operator Response Time Program, Revision 1
- OP-CL-102-106-1001, Operator Response Time Program at Clinton Power Station, Revision 1
- OP-CL-108-101-1003-F-01, Pre-Shift Briefing Agenda, Revision 6
- OP-CL-108-101-1003, Operations Department Standards and Expectations, Revision 29
- TQ-AA-150, Operator Training Programs, Revision 9
- TQ-AA-155, Conduct of Simulator Training and Evaluation, Revision 2
- REMA C15-001, Reactivity Management Plan, Revision 0
- CPS 3001.01, Preparation for Startup and Approach to Critical, Revision 26a
- CPS 3002.01, Heat up and Pressurization, Revision 30a
- CPS 3004.01, Turbine Startup and Generator Synchronization, Revision 32
- CPS 3005.01, Unit Power Changes, Revision 40b
- CPS 3006.01, Unit Shut down, Revision 42e
- LORT Week 1 Written RO Exam

- LORT Week 1 Written SRO Exam
- LORT Week 2 Written RO Exam
- LORT Week 2 Written SRO Exam

1R12 Maintenance Effectiveness

- Regulatory Guide 1.160, Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 2
- NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 2
- AR 01241363, "LL System Classified Maintenance Rule (a)(2) at Risk for 2Q2011"
- AR 01385954, "LL System Exceeds Maintenance Rule Reliability Criteria"
- AR 01558332, "NRC Questions Emergency Lighting (LL) Maintenance Rule"
- AR 01564511, "Error Identified in Maintenance Rule A3 Report"
- CPS 3822.16, "Safe Shutdown Pathway Emergency Lighting Functional Test," Revision 11
- CPS 3822.16C002, "Hand-Held Emergency Lighting Functional Test Checklist," Revision 1a
- CPS 3822.17, "Emergency Lighting Battery Pack Verification and Testing," Revision 17
- CPS 3822.17C006, "Safe Shutdown Hand-Held Emergency Light Checklist (Group 6)," Revision 2c
- ER-AA-310, "Implementation of the 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
- MA-AA-723-350, "Emergency Lighting Battery Pack Quarterly Inspection," Revision 13
- Memo from W. H. Bohlke to Site Engineering Managers concerning Maintenance Rule – Emergency Lighting Performance Criteria, September 1, 1999
- Enterprise Maintenance Rule Database
- Maintenance Rule Expert Panel Meeting Minutes, Tuesday, August 14, 2012
- Maintenance Rule Expert Panel Meeting Minutes, Thursday, October 11, 2012
- Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2
- 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 8
- ER-AA-310-1001, "Maintenance Rule Scoping," Revision 4
- ER-AA-310-1004, "Maintenance Rule – Dispositioning Between (a)(1) and (a)(2)," Revision 6
- Action Tracking Item 1460208, "Diesel Generator Action Plan Report," May 29, 2013
- AR 01334761, "1VD01YA Hydramotor Coupling Disconnected"
- AR 01547294, "1VD01YC Division 3 DG Supply Air Damper Did Not Open"
- AR 01561404, "1TZVD003C: Division 3 VD Exhaust Damper Not Open"
- AR 01566174, "(A)(1) Determination Required for Diesel Ventilation System"

1R13 Maintenance Risk Assessments and Emergent Work Control

- ER-AA-600, Risk Management, Revision 6
- ER-AA-600-1012, Risk Management Documentation, Revision 10
- ER-AA-600-1014, Risk Management Configuration Control, Revision 6
- ER-AA-600-1042, On-Line Risk Management, Revision 7
- WC-AA-101, On-Line Work Control Process, Revision 20

- WC-AA-104, Integrated Risk Management, Revision 20
- C1R14 Shutdown Safety Management Program
- AR 01572560, 1C51K600C: Source Range Monitor C Indications Erratic
- EC 395227, Evaluation of Work Order Temporary Change to Store SRM B Detector Inside IRM D Dry Tube to Facilitate Replacement of SRM B Dry Tube
- WO 00929176, SRM Contingency Repairs
- ER-AA-600, "Risk Management," Revision 6
- ER-AA-600-1012, "Risk Management Documentation," Revision 9
- ER-AA-600-1014, "Risk Management Configuration Control," Revision 6
- ER-AA-600-1042, "On-Line Risk Management," Revision 7
- WC-AA-101, "On-Line Work Control Process," Revision 19
- WC-AA-104, "Integrated Risk Management," Revision 18

1R15 Operability Evaluations

- OP-AA-108-115, Operability Determinations, Revision 11
- OP-AA-108-1002, Supplemental Consideration for On-shift Immediate Operability Determinations, Revision 2
- OP-AA-108-104, Technical Specification Compliance, Revision 1
- OP-AA-111-101, Operating Narrative Logs and Records, Revision 8
- LS-AA-120, Issue Identification and Screening Process, Revision 14
- Calculation 028015(EMD), "Piping Stress Report 1SX01C Shutdown Service Water Subsystem," Revision 3-S
- M05-1052, Sheet 47 of 111, "Divisional Separation and High-Energy P&ID's, Shutdown Service Water," Revision 9
- M05-1052, Sheet 48 of 111, "Divisional Separation and High-Energy P&ID's, Shutdown Service Water," Revision 8
- AR 01570843, "1SX11B Failed 9861.09D009,"
- EC 395711, "Impact of 1SX011B Test Failure on SX Operability," Revision 0
- AR 01592687, Low Pressure Core Spray Discharge Pressure High Annunciator 5063-3G Received
- CPS 9843.01, Appendix A, Acceptance Criteria for RCS Pressure Isolation Valves, Revision 35f
- CPS 3313.01, Low Pressure Core Spray, Revision 16b
- EC 371530, Generic Letter 2008-01 System Evaluation Template, Exelon Specific, Clinton Power Station, LPCS Evaluation, Revision 1
- AR 01593809, NRC Resident Question on operability Review of IR 1592687
- AR 01575454, Pinhole Sized Leak Downstream of 1SX019A
- AR 01576494, Another Pinhole Sized Leak Downstream of 1SX019A
- ASME Code Case N-513-3, Dated January 26, 2009
- ASME Welding Procedure Specification Record (QW-482) WPS 1-1-GTSM-PWHT
- CPS 8209.05F001, Clinton Power Station Procedure Qualification Record ASME Section IX Joint QW-402
- WO 01106991, 1SX20AA Division 1 SX System Piping Replacement Required
- CC-AA-501-1021, Exelon Nuclear Welding Program Repair of Welds and Base Metal, Revision 3
- Case N-513-3; Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping; Section XI, Division 1; January 25, 2009
- WPS 1-1-GSTM-PWHT; ASME Welding Procedure Specification Record; Revision 2
- WO 01106991; 1SX20AA: Division 1 SX System Piping Replacement Required; Task 04
- CC-AA-501-1021; Exelon Nuclear Welding Program Repair of Welds and Base Metal; Revision 3

- Article IWA-4000; Repair/Replacement Activities; 2004
- Drawing M05-1052; P&ID Shutdown Service Water (SX) Clinton Power Station; Sheet 1
- IR 1575454; Pinhole Sized Leak Downstream of 1SX019A; October 23, 2013
- IR 1576494; Another Pinhole Sized Leak Downstream of 1SX019A; October 25, 2013
- AR 01572718, "EM 1G33-F001 'As-Found' Thrust Verification Not Performed"
- AR 01573096, "C1R14 Leaktight Damaged By Heat on 1B21-F028C Limit Switches"
- AR 01575941, "Found Motor Leads and Control Leads Very Damaged Due to Heat"

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 395227, Evaluation of Work Order Temporary Change to Store SRM B Detector Inside IRM D Dry Tube to Facilitate Replacement of SRM B Dry Tube
- WO 01542476, Dry Tube Replacement (Source Range Monitor) Replacement in C1R14
- CPS 8818.01, Source Range Monitor Intermediate Range Monitor Detector String Removal, Revision 19f
- WO 01681743, MM Install Gag on 1IA006 To Support Work on 1IA175, Task 08
- EC 395783, Temporary Change to Mechanically Gag/Secure Valve 1IA006 In the Open Position In Support of Rework On the 1IA175, Valve; Revision 0
- Drawing M05-1040, P&ID Instrument Air Containment Building (IA) Clinton Power Station, Sheet 5
- WO 01681743, OP 1IA175 As Left LLRT (9861.02D028), Task 02

1R19 Post-Maintenance Testing

- MA-AA-716-012, Post-Maintenance Testing, Revision 19
- WO 01535410, "OP Perform 9015.06, Section 8.2 (SLC Pump A)"
- AR 01574580, "C1R14 LL: Air in the SLC System Impacting Performance"
- AR 01574577, "C1R14 LL: Procedure Enhancement for 9015.02"
- AR 01574375, "1C41C001A: SLC Pmp A Failed 9015.02 Section 8.4"
- CPS 9015.06, "Cold Shutdown Standby Liquid Control Pump and Valve Operability Check," Revision 29c
- CPS 9015.06D001, "Cold Shutdown SLC Pump and Valve Data Sheet," Revision 29
- CPS 9015.02, "Standby Liquid Control Injection Operability," Revision 38a
- M05-1077, "P&ID Standby Liquid Control (SC)," Revision AC
- WO 01471754, Perform SER 5-09 NON-SEG Bus Torque and DLRO Checks for Reserve Auxiliary Transformers
- CPS 88440.01D001, Insulation Testing Data Sheet, Revision 10a
- CPS 8410.05, Installation/Removal of Ground Test Device in 4169v/6900v Switchgear, Revision 9
- WO 0154333, Test Reserve Auxiliary Transformer C Protective Relays and Lockout Functional
- CPS 8500.35, Reserve Auxiliary Transformer Protective Relays Functional Testing, Revision 6
- AR 01571057, Foreign Material Found in 1PL90J
- AR 01571170, 1AP02EB: out of Specification Reading on RAT 1B1 NSB
- AR 01571366, 1AP02EA CT Relay Circuit Ground Challenge
- AR 01571384, Small Crack Found on 0SY01EA Circuit Switcher End Bell
- AR 01571387, Vendor Manual Has Incorrect Information About Electrodes

- AR 01572472, Issues Identified with RAT A and C CT Cable Shields
- WO 01380665, Replace 2301A Governor on Division 1 Diesel Generator
- CPS 2802.04, Diesel Generator 1A Woodward 2301A and EGB-13P Governor Adjustment, Revision 3b
- CPS 2802.04D001, Diesel Generator 1A EGB Governor Test Data Sheet, Revision 0
- CPS 9080.21, Appendix B, Interpreting Transient Test Channel Response, Revision 33b
- CPS 9080.21D001, Diesel Generator 1A – ECCS Integrated Data Sheet, Revision 26b
- CPS 9080.01, Diesel Generator 1A Operability Manual and Quick Start Operability, Revision 55
- AR 01573711, 1DG16ML Did Not Spray oil Mist on Startup on Division 1 Diesel
- AR 01574213, 0IP54EB Trips its Supply Breaker
- AR 01574311, 1TIDG148 Two Temperatures Found out of Band
- AR 01574315, 1PIDG043 Pressure High Out of Normal
- WO 01166934, Perform Valve Inspection/Replacement if Necessary 1SX014A
- CPS 9861.09D008, Leakage Test on Valve 1SX014A, Revision 2b
- WO 00496573, 1SX004A Replace Valve due to Seat Leakage
- CPS 9027.01C007, RSP Operability – SX Checklist, Revision 8a
- CPS 9069.02, Shutdown Service Water Valve Operability Test, Revision 35
- CPS 9069.02D001, SX System Valve Operability Data Sheet, Revision 34
- WO 00576535, Suspect Valve Leaking by Seat 1SX008A
- WO 01676779, Verify Shutdown Service Water Flow Path Division 1
- CPS 9069.03, Shutdown Service Water Flow Path Verification, Revision 28a
- AR 01570140, 1SX11B Indicates Intermediate
- AR 01571203, Linear NDE Indications Discovered in 1E12F068A
- AR 01571294, 1SX014A Unable to Perform As Found Diagnostic Testing
- AR 01574184, PMT Task Missing on WO 01633163-12
- MA-AA-716-012, “Post-Maintenance Testing,” Revision 11
- CPS 3808.01, “RCIC Turbine Overspeed Trip Test,” Revision 10
- CPS 9000.05, “Suppression Pool Temperature Log,” Revision 27
- CPS 9000.05D001, “Suppression Pool Temperature Log Data Sheet,” Revision 27
- CPS 9051.01, “HPCS Pump and HPCS Water Leg Pump Operability,” Revision 47c
- CPS 9051.01D001, “HPCS Pump and HPCS Water Leg Pump Operability Data Sheet,” Revision 47c
- CPS 9051.02, “HPCS Valve Operability Test,” Revision 41a
- CPS 9054.01C002, “RCIC (1E51-C001) High Pressure Operability Checks,” Revision 7b
- CPS 9054.01D002, “RCIC (1E51-C001) High Pressure Operability Checks Checklist,” Revision 25a
- CPS 9061.09, “MS/FW System Valve Operability (Cold Shutdown),” Revision 36b
- CPS 9061.09D001, “MS/FW System Valve Operability Data Sheet,” Revision 32a
- CPS 9861.04, “MSIV Local Leak Rate Test (MC-5, 6, 7, 8),” Revision 27
- CPS 9861.04D001, “MSIV LLRT Data Sheet (1MC-6),” Revision 27a
- WO 01347627-06, “OP PMT for 1B21-F022A 9861.04D001 MSIV LLRT,” October 28, 2013
- WO 01347627-10, “EM 1B21-F022A De-Term MSIV Actuator at EGS Connector,” October 14, 2013
- WO 01347627-11, “EM 1B21-F022A Re-Term MSIV Actuator at EGS Connector,” October 19, 2013
- WO 01366762-03, “OP PMT Stroke Valve 1E22-F015 Per 9051.02,” October 24, 2013
- WO 01499641-01, “OP 9061.09 MS/FW System Valve Operability (MSIV’s),” October 27, 2013
- WO 01536983-03, “OP PMT 1E22-F012 Stroke/Verify Operation and Position Indication Lights,” October 24, 2013

- WO 01539547-09, "OP PMT High Pressure Operability Run for 1E51-C002 RCIC Turbine," October 29, 2013
- AR 00863353, "System Engineer ID – Minor Oil Seepage – RCIC Turbine Skid 1E51-C002"

1R20 Outage Activities

- CPS 3021.01, Drywell Close Out Long Form, Revision 15a
- CPS 3021.02, Drywell Closeout Short Form, Revision 8
- CPS 3007.01C005, Operation with a Potential for Draining the Reactor Vessel Checklist, Revision 2b
- AR 01570693, Breaker Found on with Clearance Tagged Position of OFF
- AR 01570406, F15 Refuel Bridge Full Down Limit Coming in Too Early
- CPS 3703.01, Appendix C , Refueling Bridge (F15) Station Work Aids, Revision 27b
- 50.59 Review Coversheet Form, Revise O.R.M Section 2.6.3 to Delete Testing Requirement 4.6.3.d
- CPS 9091.02, Refueling Bridge F15 Crane Hoist Operability, Revision 33b
- AR 01576484, Reactor Head Washer installed Incorrectly
- MA-CL-716-103, Reactor Assembly, Revision 9
- MA-AA-796-024, Scaffold Installation, Inspection and Removal, Revision 8
- MA-AA-716-025, Scaffold Installation, Modification and Removal Request Process, Revision 9
- NES-MS-04.1, Seismic Prequalified Scaffolds, Revision 6
- AR 01571041, NRC Identified Scaffold not Tied Off Properly
- AR 01574003, NRC Question About Engineering Review of Scaffolds
- AR 01576792, NRC Question About Engineering Assessment of Scaffolds
- NRC Enforcement Guidance Memorandum, EGM 11-003, "Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Containment Requirements During Operations with a Potential for Draining the Reactor Vessel," Revision 1
- OP-CL-108-101-1003, "Operations Department Standards and Expectations," Revision 30
- OU-AA-103, "Shutdown Safety Risk Management," Revision 12
- Clinton Power Station C1R14 Shutdown Safety Management Program, C1R14 Shutdown Safety Analysis, Revision 1 Approved July 10, 2013
- EC 365628, "Evaluate Vessel Drainage Through An Open CRDM Flange," Revision 0
- EC 379615, "Evaluate Hole Size for OPDRV," Revision 1
- CPS 3007.01C005, "Operations with a Potential for Draining the Reactor Vessel Checklist," Revision 2b
- CPS 3408.01C001, "VR/VQ Refueling Outage Support Checklist," Revision 0b
- CPS 9000.02D001, "Unit Attendant Surveillance Log Data Sheet," Revision 37a
- CPS 9000.06, "Reactor Coolant and Vessel Metal/Pressure/Temperature Limit Logs," Revision 31c
- CPS 9000.06D001, "Heatup/Cooldown, Inservice Leak and Hydrostatic Testing 30 Minute Temperature Log," Revision 30a
- Apparent Cause Evaluation 1580123-07, "Incorrect Technical Specification Call Results in Missed ITS Actions"
- Prompt Investigation #1580123, "Incorrect Technical Specification Call Results in Missed ITS Actions"
- WO 01684175-01, "MM 1B21-F022B Stroke Time Adjustment per 8216.12," October 28, 2013
- AR 01459608, "Revision to Enforcement Guidance Memorandum 11-003, OPDRV"
- AR 01538876, "Results of C1R14 Shutdown Safety Independent Review"
- AR 01550938, "ER-AA-600-1023 Clarification Needed"
- AR 01571411, "Utilization of EGM-11 for OPDRVs"
- AR 01571571, "Replacing Snubber 1RT01003S in the C1R14 Scope"
- AR 01571832, "Fatigue Assessment"

- AR 01576850, "9061.11 Step 8.13 Failed for 1B21-F028B and 1B21-F028D"
- AR 01577230, "EOID 1B21-F022B Failed IA Piping Pressure Test"
- AR 01577388, "1B21-F022B Stroked Too Fast During 9061.09"
- AR 01580123, "Incorrect Technical Specification Call Results in Missed ITS Actions"
- AR 01586807, "C1R14LL – Initial Reactor Water Level to Start 9059.01"

1R22 Surveillance Testing

- CPS 9434.03, "ATWS Logic System Functional," Revision 34h
- AR 01576496, "Valve Failed to Indicate Full Open"
- AR 01576332, "1RR04JB-K14: 9434.03 Division 2 ATWS Time Delay Relay OOS"
- AR 01576427, "Breaker Will Not Close in Test & Floor Tripper Not Working"
- AR 01592519, "NRC Questioned Functionality Review of IR 1576332"
- CPS 4411.08, "Alternate Control Rod Insertion," Revision 6
- E02-1RR99, Sheet 515, "Reactor Recirculation System (RR) Anticipated Transient Without Scram (ATWS) System Control 2," Revision G
- WO 01545388, "9434.03B20 LSF *ATWS LSF (Division II)"
- WO 1459364; MC 035, LLRT High Pressure Core Spray Injection; Task 01
- CPS 9861.02D013; LLRT Data Sheet for 1MC035 – High Pressure Core Spray Injection; Revision 28
- CPS 3309.01V001; High Pressure Core Spray Valve Lineup; Revision 11b
- WO 01516837; MC 037K05, LLRT: HPCS System; Task 01
- CPS 9861.05D003; High Pressure Core Spray Water Leak Rate Test Data Sheet; Revision 24
- CPS 3309.01E001; High Pressure Core Spray Electrical Lineup; Revision 8
- Drawing M05-1074; P&ID High Pressure Core Spray (HP) Clinton Power Station Unit 1; Sheet 1
- CPS 9861.02D017, "LLRT Data Sheet for 1MC043 – RCIC Steam Supply," Revision 31
- CPS 9861.02D002, "MSIV 'B' LLRT Data Sheet (1MC-8)," Revision 27a
- CPS 9861.04D001, "MSIV 'A' LLRT Data Sheet (1MC-6)," Revision 27a
- CPS 9080.21, "DG 1A – ECCS Integrated," Revision 33a
- CPS 9080.21D001, "DG 1A – ECCS Integrated Data Sheet," Revision 26b
- AR 01571244, "MSIV LLRT Needs to be Reperformed Due to Invalid Data"
- AR 01572093, "RCIC Steam Supply LLRT Increased Leakage (CPS 9861.02D017)"
- AR 01572168, "Excessive Leakage Found From 1B21F022A During Testing"
- AR 01572317, "1H13P661-C-CA14-A116 Time Delay Failed 9430.30 Testing"
- AR 01572571, "1E51-F066 Fails Cat 'A' IST Leakage Test"
- WO 01514434, "OP MC006 LLRT Requirements (MSIV – A) and PIT 1E32-F001A," October 9, 2013
- WO 01514437, "OP MC008 LLRT Requirements (MSIV – B) and PIT 1E32-F001E," October 9, 2013
- WO 01516891, "OP MC043 LLRT: RCIC Steam Supply (Test Set 'A')," October 12, 2013

1EP4 Emergency Action Level and Emergency Plan Changes

- EP-AA-1000, Standardized Radiological Emergency Plan, Revision 22 and 23
- EP-AA-1003, Radiological Emergency Plan Annex for Clinton Station, Revision 21, 22, and 23
- EP-AA-110-200, Dose Assessment, Revision 5
- EP-AA-110-201, On Shift Dose Assessment, Revision 1

2RS1 Radiological Hazard Assessment and Exposure Controls

- RP-AA-1004, Radiation Protection Stop Work Authority and Corporate RPM Event Notification, Revision 7
- RP-AA-220, Bioassay Program, Revision 8
- RP-AA-230, Operation of the Canberra Fastscan Whole Body Counter, Revision 1
- RP-AA-300, Radiological Survey Program, Revision 10
- RP-AA-301, Radiological Air Sampling Program, Revision 5
- RP-AA-350, Personnel Contamination Monitoring, Decontamination and Reporting, Revision 11
- RP-AA-503, Unconditional Release Survey Method, Revision 5
- RP-AB-460, TIP Area Access Controls, Revision 1
- Intake Investigation Forms; various records
- SAM Calibration Record #298, October 13, 2013
- AR 1569752, C1R14 Refuel Floor Airborne Condition During Reactor Disassembly
- Weekly LHRA/HRA Checklists, Various Records
- RP-AA-300, Radiological Survey Program, Revision 10
- RP-AA-300-1001, Discrete Radioactive Particle Controls, Revision 3
- RWP 10014393, C1R14 Refuel Cavity Work, Revision 0
- RWP 10014393, Reactor Cavity Decon Plan
- Radioactive Source Inventories and Leak Tests, December 2012 through June 2013
- National Source Tracking System Reconciliation, January 22, 2013
- Clinton Station Source Inventory Database
- Airborne Radioactivity Calculations, Refuel Floor; Various Records
- Airborne Radioactivity Calculations, Drywell; Various Records
- Radiological Surveys; Drywell, Various Records
- Radiological Surveys; Refuel Floor, Various Records
- C1R14 RWP Dose/WIP Report, Various Records
- AR 01480937, Contaminated Water Coming from Drain Pipe in Raceway, February 27, 2013
- AR 01481658, Periodic Survey Identifies Elevated Dose Rates, February 28, 2013
- AR 01491105, RP forced Outage Critique, March 22, 2013
- AR 01499489, NOS ID: Gap to Excellence for RP Source Storage Conditions, April 9, 2013
- AR 01528326, Dose Rate Monitor Alarmed While Ops Was in FC "B" Pump Room, June 24, 2013
- AR 01535039, Area Surveys Should be Quarterly vs. Semi-annually, July 12, 2013
- AR 01571348, Drywell Dose Alarm, October 12, 2013
- AR 01571562, Worker Received an Unexpected Dose Rate Alarm, October 13, 2013
- AR 01572815, Worker Received ED Rate Alarm, October 16, 2013

2RS2 Occupational ALARA Planning and Controls

- RWP 10012062 WIP Log
- AR 01313140, IR to Track ACE for C1R13 Dose Overage, January 13, 2012
- AR 01537178, Future Outage Dose Reduction Initiatives, July 18, 2013
- AR 01593794, Potential Green Finding from NRC Inspection 2013-005, December 6, 2013
- RP-AA-401, Operational ALARA Planning and Controls, Revisions 13-15
- RP-AA-401-1002, Radiological Risk Management, Revision 4
- RP-AA-400-1006, Outage Exposure Estimating and Tracking, Revision 3
- BRAC Point Survey Records, 2010-2013
- C1R13 ALARA Plans, Work-in-Progress Reviews, Post Job Reviews; Various Records
- C1R14 ALARA Plans, Work-in-Progress Reviews, Post Job Reviews; Various Records
- Station ALARA Committee Meeting Minutes, Various Records

- RWP 10014393, C1R14 Refuel Cavity Work ALARA Plan, Revision 0
- RWP 10014332, C1R14 Drywell Scaffolding ALARA Plan, Revision 0
- RWP 10014324, C1R14 ISI Inside Bioshield ALARA Plan, Revision 0
- RWP 10014351, C1R14 Drywell ISI Bioshield Support Work ALARA Plan, Revision 0
- RWP 10014394, C1R14 Refuel Floor Reactor Disassembly and Reassembly ALARA Plan, Revision 0
- Clinton Power Station 2013-2017 Dose Excellence Plan; Revision 0
- AR 01483069, Potential TIP Dose Reduction; March 4, 2013
- AR 01491105, RP Forced Outage Critique; March 22, 2013
- AR 01514153, Emergent Exposure 1DV038B Steam Leak, May 15, 2013
- AR 01537178, Future Outage Dose Reduction Initiatives, July 18, 2013
- AR 01572597, RWP 10014349 Exceeds Dose Estimate by 25%, October 16, 2013
- AR 01574948, Ongoing Equipment Issues Delays RT Start Up, October 21, 2013
- RP-AA-401, Operational ALARA Planning and Controls, Revision 15

40A1 Performance Indicator Verification

- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- LS-AA-2100, Monthly Data Elements for NRC Reactor Coolant System Leakage, Revision 5
- RP-AA-460, Controls for High and Locked High Radiation Areas, Revision 24
- Occupational Radiation Protection Performance Indicator Validation Packages, Fourth Quarter 2012 through Third Quarter 2013
- AR 01482741, Key Improperly Issued, March 3, 2013
- AR 01593036, NRC PI Needs to be Revised, December 4, 2013
- NRC RETS/ODCM Radiological Effluent Occurrence Data, Fourth Quarter 2012 through Third Quarter 2013
- Dose Equivalent Iodine Determination Data, Fourth Quarter 2012 through Third Quarter 2013
- Occupational RP PI Validation Packages, Fourth Quarter 2012 through Third Quarter 2013
- Internal Dose Investigations, Fourth Quarter 2012 through Third Quarter 2013
- External Dosimetry Logs and Investigations: Fourth Quarter 2012 through Third Quarter 2013
- AR 01482741, Key Improperly Issued, March 3, 2013
- AR 01517760, 800 Turbine Roof Hatch Left Open, May 24, 2013

40A2 Identification and Resolution of Problems

- LS-AA-125, Corrective Action Program Procedure, Revision 17
- LS-AA-120, Issue Identification and Screening Process, Revision 14
- OP-AA-102-103, "Operator Work-Around Program," Revision 3
- OP-AA-102-103-1001, "Operator Burden and Plant Significant Decisions Impact Assessment Program," Revision 4
- Clinton Power Station – Unit 1 Fuel Building HVAC System Design Criteria DC-VF-01-CP, Revision 4
- EC 395486, "Evaluate PC-TCC for Temporary Bypassing of Fuel Building Supply Fans High Differential Pressure Trip When Opening FB Inner Railroad Bay Doors," Revision 0
- CPS 3404.01, "Fuel Building HVAC (VF)," Revision 12e
- AR 01563609, "Fuel Building Ventilation Tripped Off – EOP 8 Entry Required"
- AR 01564283, "OVC28YB Failed to Close During VC Shift VC B to VC A"
- AR 01564914, "Procedure Revision to 3404.01"
- AR 01563704, "Additional Information For VF Troubleshooting"
- AR 01568618, "VF Supply Fans Tripped"
- AR 01588939, "Need Additional Cleaning of VF Exhaust Flow Straightener"

- AR 01589104, "NRC Resident Inspector Question"
- AR 01590128, "EOP-8 Entry Required While Transferring From VG to VF"

4OA3 Followup of Events and Notices of Enforcement Discretion

- Enforcement Guidance Memorandum 11-003, Revision 1
- Clinton Power Station Updated Final Safety Analysis Report, Revision 15
- LER 05000461/2013-001-00, "Inadequate Risk Identification Results in Loss of Safety Function," April 17, 2013
- LER 05000461/2013-006-00, "Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 1," December 11, 2013
- Event Notification 48765, February 18, 2013
- Equipment Apparent Cause Evaluation AR 01476647, "Division 4 NSPS Bus Transferred to Reserve Feed," Revision 0
- AR 01476647, "Division 4 NSPS Bus Transferred to Reserve Feed"

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agency-wide Documents and Management System
ALARA	As-Low-As-Reasonably-Achievable
APRM	Average Power Range Monitor
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CPS	Clinton Power Station
DC	Direct Current
EGM	Enforcement Guidance Memorandum
EIPs	Emergency Plan Implementing Procedure
HPCS	High Pressure Core Spray
HVAC	Heating, Ventilation and Air Conditioning
ICDPD	Incremental Core Damage Probability Deficit
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
ISI	Inservice Inspection
LER	Licensee Event Report
LHRA	Locked High Radiation Area
LLRT	Local Leakrate Testing
LORT	Licensed Operator Requalification Training
MPFF	Maintenance Preventable Functional Failure
MRFF	Maintenance Rule Functional Failure
MS	Mitigating Systems
MT	Magnetic Particle Examination
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NSPS	Nuclear System Protection System
OPDRV	Operation with the Potential to Drain the Reactor Vessel
OSP	Outage Safety Plan
OWAs	Operator Workarounds
PARS	Publicly Available Records
PI	Performance Indicators
PT	Penetrant Examination
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RFO	Refueling Outage
RMPFF	Repetitive Maintenance Preventable Functional Failure
RO	Reactor Operator
SRA	Senior Reactor Analyst
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SRO	Senior Reactor Operator
SSC	Structure, System and Component
SX	Shutdown Service Water
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

URI	Unresolved Item
UT	Ultrasonic Examination
VF	Fuel Building Ventilation
WIP	Work In Progress

If you contest the violations or significances of these 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 Inspectors 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.

As a result of the Safety Culture Common Language initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

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Sincerely,

/RA/

Anne T. Boland, Director
Division of Reactor Projects

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Letter to Michael Pacilio from Ann Boland dated February 11, 2014

SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT
AND EXERCISE OF ENFORCEMENT DISCRETION 05000461/2013005

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