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

August 6, 2012

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

SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT 05000461/2012-003

Dear Mr. Pacilio:

On June 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Clinton Power Station. The enclosed report documents the inspection results, which were discussed on July 17, 2012, with Mr. K. Taber and other members of your staff.

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

Based on the results of this inspection, one NRC-identified finding and one self-revealed finding of very low safety significance were identified. Each of these findings was determined to involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, was reviewed by the inspectors and is listed in this report.

Because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating the above inspector-identified, self-revealed, and licensee-identified violations as Non-Cited Violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Clinton Power Station. In addition, if you disagree with a cross-cutting aspect assignment 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 Clinton Power Station.

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/

Mark A. Ring, Branch Chief
Branch 1
Division of Reactor Projects

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

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	05000461/2012-003
Licensee:	Exelon Generation Company, LLC
Facility:	Clinton Power Station, Unit 1
Location:	Clinton, IL
Dates:	April 1 through June 30, 2012
Inspectors:	B. Kemker, Senior Resident Inspector D. Lords, Resident Inspector M. Phalen, Senior Health Physicist D. Reeser, Operations Engineer R. Walton, Senior Operations Engineer S. Mischke, Resident Inspector, Illinois Emergency Management Agency
Approved by:	M. Ring, Chief Branch 1 Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS

Inspection Report (IR) 05000461/2012-003, 04/01/12 – 06/30/12; Clinton Power Station, Unit 1; Adverse Weather Protection, Problem Identification and Resolution.

This report covers a 3-month period of inspection by the resident inspectors and announced baseline inspections by regional inspectors. Two Green findings, each of which had an associated Non-Cited Violation, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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. The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," when permanently installed tornado missile barrier protection was removed without adequate provisions to assure that appropriate quality standards were specified and included in design documents and that deviation from such standards was controlled. The licensee failed to ensure tornado missile protection for safety related components prior to and during maintenance affecting Control Room Ventilation (VC) Train 'A'. Specifically, when the permanent missile barrier was removed, the licensee failed to ensure protection for two safety related radiation monitors, 1RIX-PR009C and 1RIX-PR009D and did not satisfy requirements in modification documents for protection of VC panel 0PL72JA. The licensee entered this issue into its corrective action program for evaluation and performed immediate corrective actions to resolve the design deficiencies at the time of identification.

  The finding was of more than minor significance because it was sufficiently similar to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," Example 3(a) in that this modification was found to contain errors significant enough that the modification required rework to correctly resolve design basis tornado concerns. The performance deficiency was also associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to protect safety related components during work activities that modified the installed missile barrier required by the Clinton Power Station design. The finding was a licensee performance deficiency of very low safety significance because the design deficiency was confirmed to not result in an actual loss of operability or functionality. The inspectors concluded that the finding affected the cross cutting area of human performance. Specifically, in the area of work control, the licensee did not appropriately plan work activities by incorporating job site conditions and the need for adequate planned contingencies. (IMC 0310 H.3(a)) (Section 1R01.4.b.1)

- Green. A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on December 18, 2011, when an automatic reactor scram signal and loss of decay heat removal occurred due to low reactor pressure vessel (RPV) water level while lowering water level following an RPV hydrostatic pressure test. These actions occurred because the licensee failed to establish an adequate procedure to perform reinstallation of common shutdown and upset level instrument reference leg piping. Specifically, inadequacies with the procedure resulted in improper filling and venting of the reference leg piping causing inaccurate indication of RPV level - an error of approximately 108 inches. In addition, the licensee failed to use appropriate acceptance criteria when accepting that the instrument restoration activities had been successfully accomplished. The licensee entered this issue into its corrective action program for evaluation and initiated corrective actions to revise procedures to more rigorously control the evolution and to train personnel.

  The finding was of more than minor significance since it was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to establish procedures adequate to maintain correct indication of RPV water level upon the reinstallation of permanent shutdown and upset level instrument reference leg piping. The finding was determined to be a licensee performance deficiency of very low safety significance based upon a Phase 3 Significance Determination Process evaluation by the Regional Senior Reactor Analyst with a risk result of approximately 4E-7 for Core Damage Frequency and no Large Early Release Frequency contribution since the event occurred more than 8 days from the beginning of the refueling outage. The inspectors concluded that this finding affected the cross cutting area of human performance. Specifically, in the area of work control, the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate. Complete, accurate, and up-to-date procedures and work packages were not available to ensure nuclear safety. (IMC 0310 H.2(c)) (Section 4OA2.2.b.1)

B. Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program

REPORT DETAILS

Summary of Plant Status

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

- On May 20th, the licensee reduced power to about 75 percent to perform control rod sequence exchange, scram time testing, and main turbine control/stop/intermediate valve and main steam isolation valve testing. The unit was returned to full power the same day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate Alternating Current Power Systems

a. Inspection Scope

The inspectors evaluated the licensee's plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems. The inspectors interviewed plant personnel and reviewed the licensee's communications protocols between the Transmission System Operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Aspects considered in the inspectors' review included:

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

The inspectors performed a walkdown of the switchyard with a plant maintenance engineer to observe the material condition of the offsite power sources. The inspectors also reviewed the status of outstanding work orders to assess whether corrective actions for any degraded conditions were scheduled with the TSO with the appropriate priority.

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

b. Findings

No findings of significance were identified.

.2 Readiness For Impending Hot Summer Weather Conditions

a. Inspection Scope

The inspectors evaluated the licensee's preparations for hot summer weather conditions, focusing on the electrical distribution system and the plant chilled water system. During the weeks of May 7 and May 21, 2012, the inspectors performed a detailed review of severe weather and plant de-winterization procedures and performed general area plant walkdowns. The inspectors focused on plant-specific design features and implementation of procedures for responding to or mitigating the effects of hot summer weather conditions on the operation of the plant. The inspectors reviewed system health reports and system engineering summer readiness review documents for the above systems.

Additionally, the inspectors verified that adverse weather related issues were entered into the licensee's corrective action program 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 seasonal extreme weather readiness inspection sample as defined in IP 71111.01.

b. Findings

No findings of significance were identified.

.3 External Flooding

a. Inspection Scope

The inspectors reviewed flood protection barriers and procedures for coping with external flooding at the plant. Clinton Power Station has limited susceptibility to external flooding as described in Section 3.4.1.1 of the Updated Final Safety Analysis Report (UFSAR) and Section 5.2 of the Individual Plant Examination for External Events Report. The inspectors reviewed CPS 4303.02, "Abnormal Lake Level," Revision 10, to assess the adequacy of the licensee response to external flooding conditions.

The inspectors conducted a walkdown of the Lake Screen House, including the Shutdown Service Water (SX) Pump Rooms. The inspectors assessed the condition of water tight door seals; the sealing of equipment floor plugs, electrical conduits, holes or penetrations in floors and walls between the pump rooms; and the condition of room floor drains, sumps, and sump pumps.

Additionally, the inspectors verified that external flooding protection issues were entered into the licensee's corrective action program 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 external flooding readiness inspection sample as defined in IP 71111.01.

b. Findings

No findings of significance were identified.

.4 Readiness For Impending Adverse Weather Condition – Tornado/High Winds

a. Inspection Scope

Since work activities included the removal of design required tornado missile barrier protection during the weeks of April 16 and April 23, 2012, the inspectors reviewed the licensee's overall preparations/protection for the expected conditions. The inspectors reviewed design documents and compensatory actions, both planned and implemented, in support of work activities. The inspectors also performed tours of areas in order to identify materials, which if present could become missiles during a tornado or with high winds. During the inspections, the inspectors focused on plant-specific design features and the licensee's procedures and contingencies used to respond to tornado and high winds conditions.

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

b. Findings

(1) Failure to Ensure Tornado Missile Protection for Safety Related Components

Introduction

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," when permanently installed tornado missile barrier protection was removed without adequate provisions to assure that appropriate quality standards were specified and included in design documents and that deviation from such standards was controlled.

Discussion

On April 20, 2012, at 12:51 p.m., the rollup door tornado missile shield grating panels were removed from door 1SD1-71 of the Control Building to support bringing into the plant a new Control Room Ventilation (VC) Train 'A' replacement fan and removing the existing fan from the building. The tornado missile shield is a plant design feature in place to protect safety related equipment in the Control Building opposite the rollup door as required by 10 CFR 50, Appendix A, General Design Criterion 2, "Design Bases for Protection Against Natural Phenomena," and Criterion 4, "Environmental and Dynamic Effects Design Bases." On April 24th, the inspectors questioned the adequacy of a temporarily installed tornado missile shield in place to protect VC Train 'A' panel 0PL72JA under Engineering Change Request (ECR) 400563 and the absence of tornado missile protection for safety related radiation monitors 1RIX-PR009C and 1RIX-PR009D, which were unprotected since the permanent missile shield was removed. In response to inspector questioning, the licensee modified its existing

temporary missile barrier in front of 0PL72JA to comply with the dimensions specified in the ECR and added additional shielding to protect 1RIX-PR009C and 1RIX-PR009D. The issue of the adequacy of the measures taken to control removal of the permanently installed missile barrier was entered into the licensee's corrective action program as Action Request (AR) 01358080.

In response to this issue, the licensee performed an engineering evaluation, Engineering Change (EC) 388873. The evaluation concluded that the minimum requirements of the options detailed in ECR 400563 had been satisfied at all times for the duration of the work activity. The evaluation also concluded that although the radiation monitors needed protection against any external missile when the installed missile barrier was removed, the controls in place had been sufficient; namely a check of the weather forecast and the approval of a Plant Barrier Impairment (PBI) Permit, to comply with the requirements of ECR 400563. The inspectors noted that ECR 400563 specified clearly in the discussion of the contingency plan and in the conclusion section of the document that in order to comply with Regulatory Guide 1.76 "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," the opening was required to be shielded at all times, and that the intent of the ECR was to keep the opening shielded at all times. ECR 400563 stated that any deviation from the plan must be approved by design engineering and it was approved for use provided all recommendations and limitations were met.

In response to further discussion with the inspectors, the licensee's regulatory affairs staff performed an additional evaluation of the issue. The licensee then concluded that ECR 400563 was internally inconsistent. A corrective action was created to submit a training request to consider using the ECR as a case study on the technical rigor of engineering products. The licensee concluded that 1RIX-PR009C and 1RIX-PR009D were not shielded due to the reuse of an old ECR that was not intended for reuse, as well as the failure of the ECR to document that the radiation monitors were already shielded at the time the ECR was originally used, approximately a year prior to the VC Train 'A' fan replacement. As a corrective action the licensee then made an annotation in its PBI log to prevent use of that ECR in the future and to require a new engineering walkdown of the job location. The licensee also created an action to brief work planners on this issue and the re-use of old ECR documents for non-routine evolutions. The licensee's second evaluation also stated that removal of missile barrier protection while monitoring weather is consistent with the application of the Maintenance Rule and not as contrary to the Clinton Power Station licensing basis. The licensee stated that UFSAR Section 3.5.2.4 recognizes that removal of a protective feature is permitted under administrative control. However, no explanation was provided as to how administrative control of the safety related radiation monitors was obtained during the work activity or how design control and compliance with the General Design Criteria was achieved. Inasmuch as the administrative controls implemented for VC Train 'A' panel 0PL72JA were inadequate because the temporary missile barrier that was installed did not conform to what was specified in ECR 400563 and the ECR did not specify any protective measures for 1RIX-PR009C and 1RIX-PR009D, the inspectors did not concur with the licensee's conclusion that simply monitoring the weather was adequate.

Analysis

The inspectors determined that the failure to ensure tornado missile protection for safety related components prior to and during maintenance affecting VC Train 'A' was a

performance deficiency warranting a significance determination. The inspectors reviewed the examples of minor issues in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and found that this issue was sufficiently similar to Example 3(a) in that this temporary modification to the Control Building structure was found to contain errors significant enough that it required rework to correctly resolve design basis tornado concerns and was therefore of more than minor safety significance. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the performance deficiency was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to protect safety related components 1RIX-PR009C and 1RIX-PR009D during work activities that modified the installed tornado missile barrier required by the Clinton Power Station design basis and the administrative controls implemented for VC Train 'A' panel 0PL72JA were inadequate because the temporary missile barrier that was installed did not conform to what was specified in ECR 400563.

The inspectors performed a Phase 1 Significance Determination Process (SDP) review of this finding using the guidance provided in IMC 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." In accordance with Table 4a, "Characterization Worksheet for IE [Initiating Events], MS [Mitigating Systems], and BI [Barrier Integrity] Cornerstones," the inspectors determined that this finding was a licensee performance deficiency of very low safety significance (Green) because the design deficiency was confirmed to not result in an actual loss of operability or functionality.

Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, in the area of work control, the licensee did not appropriately plan work activities by incorporating job site conditions and the need for adequately planned contingencies. (IMC 0310 H.3(a))

Enforcement

10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

Contrary to the above, on April 20, 2012, the licensee failed to establish measures to ensure protection of safety related components from the design basis tornado as required by 10 CFR 50, Appendix A, General Design Criteria 2, "Design Bases for Protection Against Natural Phenomena," and Criteria 4, "Environmental and Dynamic Effects Design Bases." Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section 2.3.2 of the NRC Enforcement Policy **(NCV 05000461/2012003-01, Failure to Ensure Tornado Missile**

Protection for Safety Related Components). The licensee entered this violation into its corrective action program as AR 01358080.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns (71111.04Q)

a. Inspection Scope

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

- Low Pressure Core Spray (LPCS) (single train risk significant system);
- Standby Gas Treatment (VG) Train 'A' during maintenance on VG Train 'B'; and
- Fuel Pool Cooling and Cleanup Train 'B' during maintenance on Fuel Pool Cooling and Cleanup Train 'A'.

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 corrective action program 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 partial system walkdown inspection samples as defined in IP 71111.04.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors performed fire protection tours in the following plant areas:

- Fire Zone CB-4, Division 1 Cable Spreading Room - Elevation 781'0";
- Fire Zone CB-1d, Rad-Chem Laboratory Area - Elevation 737'0";
- Fire Zone CB-3e, Division 2 NSPS [Nuclear System Protection System] Inverter Room - Elevation 781'0";
- Fire Zone M-3, Fire Pump 'B' Room - Elevation 699'0";

- Fire Zone T-1h, General Access and Equipment - Elevations 762'0", 785'0"; and
- Fire Zone T-1i, Turbine Oil Reservoir Room - Elevations 762'0", 781'0".

The inspectors verified that transient combustibles and ignition sources were appropriately controlled and assessed the material condition of fire suppression systems, manual fire fighting equipment, smoke detection systems, fire barriers and emergency lighting units. 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; that the licensee's fire plan was in alignment with actual conditions; and that 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 corrective action program 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 six quarterly fire protection inspection samples as defined in IP 71111.05AQ.

b. Findings

No findings of significance were identified.

1R06 Flooding Protection Measures (71111.06)

.1 Internal Flooding

a. Inspection Scope

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

- Radwaste Solid Waste Tank Rooms, and
- Diesel Generator (DG) Fuel Oil Storage Tank Rooms.

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

b. Findings

No findings of significance were identified.

.2 Underground Vaults

a. Inspection Scope

During this inspection period, the licensee opened and dewatered cable vaults that contained risk significant safety related and non-safety related power and control cables; evaluated the material condition of the vaults, cables, and cable supports; and monitored a plant modification (sump pumps and level alarm switches) that maintain the vaults dewatered. The inspectors verified that cables were not significantly degraded due to prolonged submergence in water, cable splices were intact, and appropriate cable support structures were in place.

This inspection constituted one annual underground cable vaults inspection sample as defined in IP 71111.06.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

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

a. Inspection Scope

The inspectors observed licensed operators during simulator training on April 25, 2012. The inspectors assessed the operators' response to the simulated events focusing on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of Emergency Plan requirements. The inspectors also observed the post-training critique to assess the ability of licensee evaluators and operating crews to self-identify performance deficiencies. 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 inspection simulator sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

On May 20, 2012, the inspectors observed licensed operators in the Control Room perform control rod sequence exchange and scram time testing. This was an activity

that required heightened awareness, additional detailed planning, and involved increased operational 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 annunciators;
- Correct use and implementation of procedures;
- Control board manipulations;
- Oversight and direction from supervisors; and
- Ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications as applicable.

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

b. Findings

No findings of significance were identified.

.3 Conformance With Examination Security Requirements (10 CFR 55.49) (71111.11B)

a. Inspection Scope

The inspectors reviewed the facility licensee's physical security controls (e.g., access restrictions and simulator I/O controls, simulator software) and integrity measures (e.g., security agreements, simulator software access) throughout the inspection period.

This inspection was not considered to be an inspection sample as defined in IP 71111.11.

b. Findings

One licensee-identified finding of very low safety significance (Green) with an associated Non-Cited Violation is documented in Section 4OA7.1 of this inspection report. No other findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated the licensee's handling of selected degraded performance issues involving the following risk significant structures, systems, and components (SSCs):

- Resolution of Valve Stroke Timing Issues for Containment Purge Isolation Valves.

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSCs. Specifically, the inspectors independently verified the licensee's handling of SSC performance or condition problems in terms of:

- Appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of SSCs in accordance with 10 CFR 50.65(b);
- Characterizing SSC reliability issues;
- Tracking SSC unavailability;
- Trending key parameters (condition monitoring);
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification; and
- Appropriateness of performance criteria for SSC functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSC functions classified (a)(1).

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance were entered into the licensee's corrective action program 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 maintenance effectiveness inspection sample as defined in IP 71111.12.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- Planned maintenance during the week of April 30 – May 4 on the Standby Liquid Control System, Fire Pump System Flow Testing, and the Reactor Core Isolation Cooling (RCIC) System;
- Planned maintenance during the week of May 7-12 on VG Train 'B' and Switchyard Insulator Removal;
- Planned maintenance during the week of May 29 – June 1 on VC Train 'A', VG Train 'A', and Division 1 Automatic Depressurization System;
- Emergent compensatory actions taken in response to AR 01371769, "NRC Question on Open Conduit in Division 3 DG Tank Room Wall";
- Emergent maintenance during the week of June 11-15 on Average Power Range Monitor (APRM) 'A', Residual Heat Removal (RHR) Train 'B' Test Return Valve to Suppression Pool 1E12-F024B, and Reactor Recirculation Train 'A' Flow Control Valve 1B33-F060A; and
- Planned maintenance during the week of June 25-29 on the Train 'B' Fuel Pool Cooling and Cleanup and Component Cooling Water Systems, and 4160 Volt Bus 1A1 Voltage Indication Loop and Indicators.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each of the above activities, the inspectors reviewed the scope of maintenance work in the plant's daily schedule, reviewed Control Room logs, verified that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities, discussed the results of the assessment with the licensee's Probabilistic Risk Analyst and/or Shift Technical Advisor, and verified that plant conditions were consistent with the risk assessment assumptions. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify that risk analysis assumptions were valid, that redundant safety related plant equipment necessary to minimize risk was available for use, and that applicable requirements were met.

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

This inspection constituted six maintenance risk assessment inspection samples as defined in IP 71111.13.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- AR 01334687, "Part 21 - 8 Inch Butterfly Valve. Event 47706";
- AR 01344501, "Free Air Cable Deficiencies Located in TCFZs [Transient Combustible Free Zones]";
- AR 01334761, "1VD01YA Hydramotor Coupling Disconnected (Division 1 DG Run)";
- AR 01358080, "Compensatory Missile Shield Not Installed Per Engineering Evaluation"; and
- AR 01377717, "Results from Division 2 SX Flow Balance".

The inspectors selected these potential operability/functionality issues based on the risk significance of the associated components and systems. The inspectors verified that the conditions did not render the associated equipment inoperable or result in an unrecognized increase in plant risk. When applicable, the inspectors verified that the licensee appropriately applied TS limitations, appropriately returned the affected equipment to an operable status, and reviewed the licensee's evaluation of the issue with respect to the regulatory reporting requirements. 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 reviewed, where appropriate, compliance with bounding limitations associated with the evaluation. When applicable, the inspectors also verified that the licensee appropriately assessed the functionality of SSCs that perform specified functions described in the

UFSAR, Operations Requirements Manual, Emergency Plan, Fire Protection Plan, regulatory commitments, or other elements of the current licensing basis when degraded or nonconforming conditions were identified.

In addition, the inspectors verified that problems related to the operability or functionality of safety related plant equipment were entered into the licensee's corrective action program 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 five operability evaluation inspection samples as defined in IP 71111.15.

b. Findings

One finding of very low safety significance (Green) with an associated Non-Cited Violation is documented in Section 1R01.4.b.1 of this inspection report. No other findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the following temporary plant modification:

- EC 388217, "Transfer Water from Containment Equipment Drain Sump to Containment Floor Drain Sump Using Siphon Hose."

The inspectors reviewed the temporary modification and the associated 10 CFR 50.59 screening/evaluation against applicable system design basis documents, including the UFSAR and the TS to verify whether applicable design basis requirements were satisfied. The inspectors reviewed the Control Room logs and interviewed engineering and operations department personnel to understand the impact that implementation of the temporary modification had on operability and availability of the affected plant SSCs.

The inspectors also reviewed a sample of action requests pertaining to temporary modifications to verify that problems were entered into the licensee's corrective action program with the appropriate significance characterization and that corrective actions were appropriate.

This inspection constituted one temporary modification inspection sample as defined in IP 71111.18.

b. Findings

No findings of significance were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors reviewed the engineering analyses, modification documents, and design change information associated with the following permanent plant modifications:

- EC 371540, "Install Blind Coupling Outside the Containment Penetration 1MC116 and Abandon the Penetration Isolation Valves 1C41F340B/F341B;" and
- EC 386212, "Open Breaker and Defeat OOS [Out-of-Service] Alarm for 1E12F037A."

During this inspection, the inspectors evaluated the implementation of the design modification and verified, as appropriate, that:

- The compatibility, functional properties, environmental qualification, seismic qualification, and classification of materials and replacement components were acceptable;
- The structural integrity of the SSCs would be acceptable for accident/event conditions;
- The implementation of the modification did not impair key safety functions;
- No unintended system interactions occurred;
- The affected significant plant procedures, such as normal, abnormal, and emergency operating procedures, testing and surveillance procedures, and training were identified and necessary changes were completed;
- The design and licensing documents were either updated or were in the process of being updated to reflect the modification;
- The changes to the facility and procedures, as described in the UFSAR, were appropriately reviewed and documented in accordance with 10 CFR 50.59;
- The system performance characteristics, including energy needs affected by the modification continued to meet the design basis;
- The modification test acceptance criteria were met; and
- The modification design assumptions were appropriate.

Completed activities associated with the implementation of the modification, including testing, were also inspected, and the inspectors discussed the modification with the responsible engineering and operations staff.

The inspectors also reviewed a sample of action requests pertaining to permanent plant modifications to verify that problems were entered into the licensee's corrective action program with the appropriate significance characterization and that corrective actions were appropriate.

This inspection constituted two permanent modification inspection samples as defined in IP 71111.18.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- WO 01508369, "MCR [Main Control Room] HVAC [Heating, Ventilation, and Air Conditioning] Chill Water Pump 'B';"
- WO 01279633-02, "Replace 1CB01PB Cuno Filter;"
- WO 01457493, "Replace MCR Return Fan 0VC04CB;"
- WO 01535121, "Replace Voltage Regulator Monitor Card AR11XZ324 in APRM 'A' (H13P669);"
- WO 01308704, "1B33A215 Servo Replacement;"
- WO 01503104, "Install EC 386212; Modification to Install a Bypass/Defeat Switch for Loss of MOV [Motor Operated Valve] Power for 1E12-F037A;" and
- WO 01550757, "Replace/Rework MCR Ventilation Damper Controllers."

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 that demonstrated operational readiness and that the acceptance criteria were 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 corrective action program documents associated with post-maintenance testing to verify that identified problems were entered into the licensee's corrective action program 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 inspection samples as defined in IP 71111.19.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- CPS 9054.01C004, "Combined RCIC (1E51-C001) High Pressure Operability Checks and RCIC Cold Quick Restart;" (Inservice Test)

- CPS 9080.13, "DG 1A 24 Hour Run and Hot Restart – Operability;" (Routine Test)
- CPS 9080.12, "Division 3 DG Fuel Oil Transfer Pump Comprehensive Pump Test;" and (Inservice Test)
- CPS 9813.01, "Control Rod Scram Time Testing." (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 corrective action program 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 two in-service tests and two routine surveillance tests for a total of four inspection samples as defined in IP 71111.22.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a full scale emergency preparedness drill on April 10, 2012, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. This drill was planned to be evaluated and was included in performance indicator data regarding drill and exercise performance. The inspectors observed emergency response operations in the Operations Simulator and Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee's drill critique to compare any inspector-observed weaknesses with those identified by the licensee's staff in order to evaluate the critique and to verify whether the licensee's staff was properly identifying weaknesses and entering them into the corrective action program.

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

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

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

This inspection constituted a partial 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 site-specific trends in collective exposures (using NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," and plant historical data) and source term (average contact dose rate with reactor coolant piping) measurements (using Electric Power Research Institute TR-108737, "BWR [Boiling Water Reactor] Iron Control Monitoring Interim Report," issued December 1998, and/or plant historical data, when available).

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

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

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

- C1R13 Drywell Inservice Inspection Inside Bio Shield,
- Reactor Disassembly/Reassembly – Cavity,
- Reactor Disassembly/Reassembly – Floor,
- C1R13 Fuel Moves, and
- Reactor Vessel In-Vessel Visual Inspection – Inservice Inspection.

The inspectors reviewed the 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 had

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., teledosimetry, 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, 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, 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 corrective action program.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the assumptions and bases (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 had established measures to track, to 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 of significance 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 of significance were identified.

.5 Problem Identification and Resolution (02.06)

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Review of Submitted Quarterly Data

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the First Quarter 2012 Performance Indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

This inspection was not considered to be an inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported Mitigating Systems Performance Index (MSPI) - Cooling Water Systems Performance Indicator. To determine the accuracy of the performance indicator data reported,

performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, Licensee Event Reports (LERs), and maintenance and test data from July 2011 through March 2012, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI - Cooling Water System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Emergency Alternating Current Power System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - Emergency AC Power System Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from April 2011 through March 2012, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI - Emergency AC Power System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - High Pressure Injection Systems Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions

and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2011 through March 2012, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI - High Pressure Injection System Performance Indicator verification injection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.5 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - Heat Removal System Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2011 through March 2012, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constitutes one MSPI Heat Removal System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.6 Mitigating Systems Performance Index – Residual Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI – Residual Heat Removal (RHR) System Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator

Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2011 through March 2012, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constitutes one MSPI - RHR System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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

This inspection was not considered to be an inspection sample as defined in IP 71152.

.2 Annual In-Depth Review Sample

a. Inspection Scope

The inspectors selected the following action requests for in-depth review:

- AR 01380555, "HPCS Test Return Line Hanger Damaged"
- AR 01304323, "1B21N027: RPV [Reactor Pressure Vessel] Level 3 Actuation"

The inspectors verified the following attributes during their review of the licensee's corrective actions for the above action requests and other related action requests:

- Complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- Consideration of the extent of condition, generic implications, common cause and previous occurrences;
- Evaluation and disposition of operability/reportability issues;

- Classification and prioritization of the resolution of the problem, commensurate with safety significance;
- Identification of the root and contributing causes of the problem; and
- Identification of corrective actions, which were appropriately focused to correct the problem.

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

This inspection constituted two annual in-depth review samples as defined in IP 71152.

b. Findings and Observations

(1) Failure to Establish Instructions Appropriate for Installation of Shutdown and Upset Level Instrument Reference Leg Piping

Introduction

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on December 18, 2011, when an automatic reactor scram signal and loss of decay heat removal occurred due to low RPV water level while lowering water level to a target level following an RPV hydrostatic pressure test. These actions occurred because the licensee failed to establish an adequate procedure to perform reinstallation of common shutdown and upset level instrument reference leg piping. Specifically, inadequacies with the procedure resulted in improper filling and venting of the reference leg piping causing inaccurate indication of RPV level - an error of approximately 108 inches. In addition, the licensee failed to use appropriate acceptance criteria when accepting that the instrument restoration activities had been successfully accomplished.

Discussion

On December 18, 2011, the reactor was in cold shutdown with operators conducting restoration activities following an RPV hydrostatic pressure test. While lowering RPV water level to a target level, a low RPV level (Level 3) reactor protection system (RPS) scram signal occurred resulting in RHR system isolation and a subsequent loss of shutdown cooling. No control rod movement occurred because all control rods were already inserted. RPV level was immediately restored above the Level 3 setpoint using the control rod drive (CRD) system. Operators reset the RHR isolation logic within minutes of the scram signal and shutdown cooling was fully restored within 26 minutes. Reactor coolant temperature increased approximately 3 degrees Fahrenheit (°F) during the event. The cause of the event was inaccurate reactor level indication due to inadequate filling and venting of the permanent, common reference leg standpipe for the shutdown and upset RPV level instruments.

Previously, after reinstallation of the RPV head during the refueling outage, on December 17th, the licensee began the process of disconnecting the temporary standpipe and installing the permanent shutdown and upset level instrument reference leg piping. As part of the evolution, Control Room operators stabilized RPV level by matching CRD makeup and reactor water cleanup (RWCU) reject flow rates as near as possible. The Control Room was then notified to stabilize and record RPV level since

the level indication would be unreliable until the reference leg piping was reattached and filled. On December 17th at 5:15 a.m., just prior to the temporary standpipe being disconnected, the value from the recorder for RPV level was 222 inches.

Afterwards, Instrument Maintenance (IM) technicians utilized CPS 8801.06, "Panel Mounted Instrument Valve Operation and Venting," Revision 33c, to perform a fill and vent of the level instrument reference leg. During the first fill evolution, no water was injected via an outside source into the reference leg piping. Shutdown range level changed from an indicated 357 inches to 343 inches, a 14 inch change. The Control Room then directed IM technicians to perform another fill evolution. A second fill evolution was performed, during which approximately one quart of demineralized water was injected into the shutdown and upset level instrument reference leg piping. According to the licensee's computer data points, at 1:21 p.m., RPV level indication changed from 353 inches to 343 inches during this second fill evolution, a 10 inch change. The licensee's subsequent investigation determined that, at this point, an additional 0.61 gallons of water was still needed in order to fill the reference leg piping. However, IM technicians reported to the Control Room that they believed the reference leg was filled with sufficient water for it to indicate correctly. Since the makeup and reject flow rates had been previously adjusted and the current level indication was 343 inches as opposed to 222 inches prior to removal of the temporary standpipe, the Control Room questioned RPV level indication and sought assistance from the Outage Control Center. The Outage Control Center responded that the indicated level change was supported by the indicated change in the pressure of the reactor recirculation pump inner seal. Consequently, Control Room staff then believed that actual water level had trended up over the 8 hours from when the temporary standpipe was removed to match the current indicated water level as correlated by the increase in reactor recirculation pump seal pressures. The licensee later determined that this logic was flawed since the correlation between seal pressure and RPV level failed to take into account RPV dome pressure.

The procedure used by IM technicians, CPS 8801.06, was generic in nature and was utilized when removing reactor instruments from service, returning them to service, and filling and venting of the reactor instruments. The procedure allowed users to cognitively "select as necessary" different sections of the procedure in order to accomplish a particular task. Procedure steps also directed performers to record the equipment identification number of valves as they were operated rather than providing specific information such as component noun name or number that was required to perform a particular task. The procedure also does not contain any guidance to determine the amount of volume required to fill different reference legs. In the previous two refueling outages the shutdown and upset level instrument reference leg piping was filled with water from an installed pressurized source. In this instance, IM technicians filled the reference leg piping using a hand pump and a portable 3.5 gallon tank as allowed by the procedure.

The inspectors thoroughly reviewed the licensee's root cause evaluation for this event and concluded that the licensee had not neglected any likely factors. The licensee identified two root causes and five contributing causes:

Root Causes

(1) There was a lack of rigorous process controls while removing and installing the permanent shutdown and upset level instrument reference leg piping. Specifically, inadequate procedural instruction existed on how to fill the shutdown and upset level instrument reference leg piping and insufficient guidance was provided on how to perform a check of the restored instrument.

(2) The licensee did not have an alternate to the shutdown range level indication to allow monitoring RPV water level during times when the shutdown and upset level instruments were not in service. This was not recognized by the licensee as a condition that had been resolved by other BWR operators. If alternate indication had been available, IM technicians and operators would have been able to confirm whether the reference leg piping had been adequately filled and vented the first time and at no point would operators been without valid RPV level indication.

Contributing Causes

(1) CPS 8801.06 was too generic for filling the shutdown and upset level instrument reference leg piping and allowed users to cognitively "select as necessary" different sections to accomplish the defined task.

(2) The impact of an 8-hour delay in filling the reference leg piping paired with making changes to reject flow rates complicated operators' efforts to validate RPV water level. Factors including imprecise communications and use of the generic procedure caused the increase in time.

(3) The reasoning used to justify the accuracy of the indicated shutdown range instrument was flawed in that it failed to take into account RPV dome pressure. The reason developed to validate indicated shutdown RPV level supported the mental model that Control Room operators and the Outage Control Center had and was accepted without formal challenges or supporting documentation.

(4) The event involved several examples of imprecise communication between different work groups that resulted in either a delay in filling the shutdown and upset level instrument reference leg piping or ineffective relaying of the rigor of technical decisions.

(5) Control Room log entries associated with this event either lacked detail or failed to capture noteworthy events. These log entries contributed to a failure to identify or validate that the shutdown range indication was inaccurate and prevented operators from identifying the true impact of the RPV Level 8 alarms clearing during the RPV level reduction.

Corrective actions identified by the licensee for the above causes included:

(1) Revision to CPS 3007.01, "Preparation and Recovery from Refueling Operation," to implement strict control over the removal and reinstallation of RPV level instrumentation.

(2) Review of industry operating experience from all loss of shutdown cooling events over the last 2 years and identify new organizational actions from the events to incorporate into a Shutdown Cooling Excellence Plan.

(3) Develop and implement an alternate method of determining RPV level during shutdown conditions or maintaining the shutdown instrument available during vessel disassembly and reassembly.

Analysis

The inspectors determined that the failure to establish instructions appropriate for the installation of shutdown and upset RPV level instrumentation was a performance deficiency warranting a significance determination. The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and found no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the performance deficiency was of more than minor significance because it was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to establish procedures adequate to maintain correct indication of RPV water level upon the reinstallation of the permanent shutdown and upset level instrument reference leg piping.

The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process," since the plant was shut down in Mode 4 (Cold Shutdown) at the time of the event. To determine if this shutdown finding needed quantitative assessment, the inspectors reviewed Table 1 in Appendix G, "Losses of Control," and the checklists in Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs [Pressurized Water Reactors] and BWRs." One of the criteria listed in Table 1 for Loss of Level in BWRs is "Inadvertent loss of 2 feet of RCS [reactor coolant system] inventory." Following the event, IM technicians completed a fill and vent procedure of RPV level transmitter 1B21N027. At the completion of this fill and vent, indicated water level changed from 195" to 86" on the shutdown range and from off-scale high (>180") to 103" on the upset range. Therefore the Table 1 criterion for loss of level was met and a quantitative risk evaluation was performed by the Regional Senior Reactor Analyst (SRA) using Appendix G, Attachment 3, "Phase 2 Significance Determination Process Template for BWR during Shutdown."

The shutdown event occurred during a late time window (about 18 days into a refueling outage with core refueling complete) and with the reactor in plant operating state (POS) 1,"RHR In Service with Vessel Head On and Reactor Coolant System (RCS) Closed." The Initiating Event Likelihood (IEL) was 1.0 since the loss of RHR event occurred with the trip of RHR Pump 'A', causing an interruption of the RHR function. Operators recovered shutdown cooling in about 26 minutes. The licensee estimated a conservative heatup rate when shutdown cooling was lost to be about 25°F per hour. The SRA estimated the time to boil based on that heatup rate to be approximately 3.5 hours.

The SRA analyzed the risk as a loss of shutdown cooling event. The applicable initiating event was "Loss of the Operating Train of Residual Heat Removal (LORHR)." Using Table 3, the IEL was zero (i.e., $10^0 = 1.0$). The SRA used Worksheet 4 from Appendix G, Attachment 3, "LORHR in POS 1 (Head On)." A credit of "3" was given for the RHR recovery (RHRREC) safety function since operators recovered shutdown cooling within the assumed timeframe. A credit of "2" was given for the manual low pressure injection and RCS pressure control (MINJ&SRV) safety function since LPCS was available with attendant instrumentation. A credit of "1" was given for the manual high pressure injection (MINJY) safety function since HPCS and CRD pumps were available. A credit of "3" was given for the containment venting (CV) safety function because of its availability. The risk result was two "6" sequences with a calculated risk significance on the order of 6.6E-6. Because of the inherent conservatism in the Phase 2 analysis, the SRA used other available plant information and further refined the risk analysis.

The SRA used the low power/shutdown SPAR-H method to estimate a human error probability (HEP) to recover RHR and for the capability for manual high pressure injection. Regarding the RHRREC safety function (time available to recover RHR), only the Action portion of the task was considered, since the Diagnosis portion was assumed to be negligible. The Performance Shaping Factors (PSFs) of "Available Time" and "Stress" were assumed to be performance drivers. The other PSFs were assumed to be nominal. Available Time was considered to be "≥ 5x the time required," and Stress was considered "high." The resulting HEP for RHRREC was 2.0E-4. For the time available, RCS temperature increased 3°F in 26 minutes, which equated to a time to boil significantly greater than 3.5 hours.

Regarding the MINJY safety function, the Diagnosis and Action portions were assumed to be nominal for all PSFs. HPCS was available with auto-injection capability. In addition, a CRD pump was already injecting, since this pump was being used to perform the draindown evolution (draindown was with a CRD pump injecting, and RWCU rejecting back to the main condenser). The resulting HEP for MINJ was 1.1E-2.

The revised risk result incorporating the SPAR-H analysis was a risk result on the order of 4E-7. In addition, other risk mitigation features were available such as LPCS with auto-initiation capability, as were RHR Pumps 'B' and 'C'. Availability of these injection sources was not impacted by the level instrumentation issues.

Since the total estimated change in Core Damage Frequency was greater than 1.0E-7/yr, the potential risk contribution for this finding from large early release frequency (LERF) was screened using the guidance of IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." For the evaluation of risk significance during shutdown, only the period within 8 days of the beginning of the outage is considered. After 8 days, it is assumed that the short-lived, volatile isotopes that are principally responsible for early health effects have decayed sufficiently such that the finding would not contribute to LERF. Since the event occurred more than 8 days from the beginning of the outage, there was no LERF contribution.

Considering the above information, the SRA determined the risk to be of very low safety significance (Green).

Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. In the area of work control, the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate. Specifically, complete, accurate and up-to-date procedures and work packages were not available to ensure nuclear safety. (IMC 0310 H.2(c))

Enforcement

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, on December 17, 2011, the licensee failed to utilize procedures appropriate to the circumstances for reinstalling, filling, and venting of RPV water level instrumentation piping. Inappropriate qualitative acceptance criteria were applied when the licensee accepted Control Room indications for RPV level, which resulted in a RPS actuation, reactor scram, and the loss of the shutdown cooling safety function. Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section 2.3.2 of the NRC Enforcement Policy **(NCV 05000461/2012003-02, Failure to Establish Instructions Appropriate for Installation of Shutdown and Upset Level Instrument Reference Leg Piping)**. The licensee entered this violation into its corrective action program as AR 01304323.

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

.1 (Closed) Licensee Event Report 05000461/2011-009-00, "Missed Surveillance Due to Preconditioning Valve Prior to Leak Rate Test"

During the refueling outage in December 2011, the licensee performed as-found leak rate measurement testing of RCS pressure isolation valve (PIV) 1E12-F041A, Low Pressure Coolant Injection (LPCI) from RHR 'A' Check Valve, in accordance with CPS 9843.01, "ISI [Inservice Inspection] Category 'A' Valve Leak Rate Test," Revision 35. This surveillance test procedure was performed to satisfy TS Surveillance Requirement (TSSR) 3.4.6.1, which required the licensee to verify the equivalent leakage of each RCS PIV is ≤ 0.5 gallon-per-minute (gpm) per nominal inch of valve size up to a maximum of 5 gpm, at an RCS pressure ≥ 1000 pounds-per-square-inch-gauge (psig) and ≤ 1025 psig in accordance with the Inservice Testing (IST) Program requirements in TS 5.5.6 and 10 CFR 50.55a, Paragraph f, "Inservice testing requirements." This check valve is also a primary containment isolation valve and must satisfy TSSR 3.6.1.3.10, which required the licensee to verify the combined leakage rate through hydrostatically tested lines that penetrated the primary containment is within limits established in accordance with the Primary Containment Leakage Rate Testing Program stipulated by TS 5.5.13 and 10 CFR 50, Appendix J, "Primary Containment Leakage Testing for Light-Water Cooled Power Reactors."

During the test, 1E12-F041A would not pressurize due to an excessive amount of water passing through the valve's seat at low pressure. Since the valve would not pressurize,

the leak rate was initially determined to exceed the TSSR 3.4.6.1 limit of 5 gpm. The licensee subsequently cycled the check valve open and then closed with a torque wrench on the valve's mechanical exerciser linkage to fully seat the valve and satisfactorily retested it. The licensee's test procedure did not appropriately ensure that the sequence of testing check valve 1E12-F041A was prior to testing the redundant LPCI MOV (1E12-F042A, LPCI from RHR 'A' Shutoff Valve). The test on 1E12-F042A pressurized the volume between the MOV and the check valve, causing the check valve to slightly lift and remain off of its seat. Since the check valve was not tightly seated when it was tested, pressurizing the test fill volume during the initial as-found leak rate test could not provide flow equivalent to that seen during normal operation with RCS pressure against the check valve. As a result, the low pressure/volume test source water went through the unseated check valve rather than force the disc back tightly against the valve seat. Had the licensee performed the leak rate test on 1E12-F041A before testing 1E12-F042A, the check valve would not have been disturbed and should have passed the initial as-found leak rate test. CPS 9843.01 did not specify the testing sequence of the check valve and MOV (e.g., check valve before the MOV). This resulted in an invalid as-found leak rate measurement and unacceptable preconditioning of 1E12-F041A in order to re-perform the leak rate test measurement. Because exercising 1E12-F041A prior to measuring the leak rate unacceptably preconditioned the check valve, the as-found leak rate test results were invalid. The test results, however, could be considered an acceptable "as-left" leak rate measurement; therefore, no safety concern remains for the next operating cycle. The licensee identified a corrective action to revise CPS9843.01 and other procedures to appropriately address the proper sequence of valve testing.

The surveillance test was determined to be a missed surveillance, which the licensee subsequently reported as an operation or condition prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B). The inspectors previously reviewed this issue and documented a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" in NRC Inspection Report 05000461/2012002 for the licensee's failure to establish an adequate procedure to perform required leak rate testing for the LPCI from RHR 'A' check valve. The inspectors determined that the information provided in LER 05000461/2011-009-00 did not raise any new issues or change the conclusion of the initial review. Therefore, the violation of TSSR 3.6.4.1 and TSSR 3.6.1.3.10 described in this LER will not be separately documented.

LER 05000461/2011-009-00 is closed.

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

.2 (Closed) Licensee Event Report 05000461/2011-008-00, "Reactor Protection System Actuation and Loss of Shutdown Cooling"

On December 18, 2011, the reactor was in cold shutdown conducting restoration activities following the RPV hydrostatic pressure test. While lowering RPV level to a target level, a low RPV level (Level 3) RPS actuation occurred resulting in a RHR system isolation, and a subsequent loss of shutdown cooling. RPV level was immediately restored above the Level 3 setpoint using the CRD system. Operators reset the RHR isolation logic within minutes of the scram signal and shutdown cooling was fully restored within 26 minutes. RCS temperature increased approximately 3°F during

the event. The cause of the event was inadequate filling and venting of the permanent, common reference leg standpipe of the shutdown and upset RPV level instruments. The licensee reported this event as an 8-hour reportable event for a valid actuation of the RPS under 10 CFR 50.72 (b)(3)(iv)(A) and also under 10 CFR 50.72 (b)(3)(v)(B) as an event that at the time of discovery could have prevented the fulfillment of a safety function needed to remove residual heat.

The event was also reportable under the provisions of 10 CFR 50.73 (a)(2)(iv)(A) due to a valid actuation of the RPS and in accordance with 10 CFR 50.73(a)(2)(v)(B) as an event that could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat.

The inspectors reviewed the licensee's root cause investigation of the scram. The licensee identified two root causes for the event: a lack of rigorous process controls while removing and installing the permanent shutdown and upset level instrument reference leg piping, and the lack of an alternate to the shutdown range level indication to allow monitoring reactor water level during times when the shutdown and upset level instruments are not in service. The inspectors did not identify any significant safety issue that was neglected in the licensee's evaluation. The performance issues related to this event are discussed in Section 4OA2.2.b.1 of this inspection report.

LER 05000461/2011-008-00 is closed.

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

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000461/2012002-01, "Evaluation of Apparent Nonconforming Condition Affecting Circulating Water (CW) Pump Auto Stop Feature during a Flooding Event"

As described in the UFSAR (Sections D3.6.4 and 10.4.5.5), each condenser cavity designed to contain flooding to Elevation 715' is equipped with a redundant system of level switches, which will alarm in the Control Room if the water level in the condenser cavity reaches an elevation of more than 1 foot (Elevation 710') above the condenser cavity floor at Elevation 709'. These level switches will close a motor-operated valve in the floor drain piping between the condenser cavity and the Turbine Building floor drain sump to slow flooding of the Turbine Building. Isolating the condenser pit from the Turbine Building floor drain sump slows early flooding of the Turbine Building basement. A second system of redundant level switches will automatically stop the CW pumps if the flood water reaches an elevation of 714' within the condenser cavity. An additional foot, from Elevation 714' to Elevation 715' remains to contain the water flow due to coast down of the CW pumps after they are initially shut off. Neither set of level switches are safety related; however, they are important internal flooding mitigation features as described in the UFSAR.

During review of ARs 01192988 and 01197763, the inspectors noted that operators discussed a known design issue affecting the function of the CW pump auto stop feature. If CW Pump 'A' has power removed, then all CW pump tripping protection is lost during a flooding event. With power removed from CW Pump 'A', CW Pumps 'B'

and 'C' would not auto stop during a flooding event because the tripping power comes through the CW Pump 'A' tripping fuses. This appeared to the inspectors to be a nonconformance with the UFSAR description under the above specified circumstance. The inspectors discussed this issue with the licensee and in response to the inspectors' questions; the licensee initiated AR 01355130 to evaluate the design concern. The inspectors opened Unresolved Item (URI) 05000461/2012002-01 pending review of the licensee's evaluation.

During this inspection period, the licensee completed its evaluation of the condition. The licensee noted that the Safety Evaluation Report (NUREG 0853, "Safety Evaluation Report related to the operation of Clinton Power Station, Unit No. 1," February 1982) described the function of the level switches; however, it did not describe the operation of the protective feature for CW Pumps 'B' and 'C' with control power removed from CW Pump 'A.' Instead, it discussed available time and indications of Turbine Building flooding for operator actions to secure the running CW pumps prior to water level reaching the 731' Elevation, beyond which flood water could possibly enter the Auxiliary Building and Control Building and affect safety related equipment. While the CW pump auto stop feature is an important internal flooding protection design feature for a postulated failure of a CW system expansion joint, it is not credited to satisfy General Design Criteria 4 requirements to prevent Turbine Building flooding from affecting safety related systems in the Auxiliary Building and Control Building.

The licensee implemented a change to the UFSAR description for the CW pump auto stop feature to enhance the description of the design. URI 05000461/2012002-01 is closed.

This review was not credited as an inspection sample.

4OA6 Management Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. K. Taber and other members of the licensee's staff at the conclusion of the inspection on July 17, 2012. The licensee acknowledged the findings presented. Proprietary information was examined during this inspection, but is not specifically discussed in this report.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- The Occupational ALARA Planning and Controls Inspection with Mr. K. Taber and other members of the licensee's staff on May 25, 2012. The inspector confirmed that none of the report input discussed was considered proprietary.
- On June 19, 2012, the inspector presented inspection results for the licensed operator examination security issue to Mr. C. Dunn and other members of the licensee's staff. The inspector confirmed that none of the report input discussed was considered proprietary.

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 Section 2.3.2 of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation.

.1 Violation of 10 CFR 55.49 Compromise of License Examination Integrity

10 CFR 55.49, "Integrity of Examinations and Tests," states, in part, that the licensee shall not engage in any activity that compromises the integrity of any application, test, or examination required by 10 CFR 55. Contrary to the above, on March 30, 2012, at the Clinton Power Station, the licensee identified that the control room simulator's plant process computer model was saving sequence of events files on a routine basis. A licensee investigation determined that the same condition existed at other Midwest Exelon sites. The licensee determined that some of the files contained examination materials related to examinations required by 10 CFR 55. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination. Although the examination materials were available for scrutiny by unauthorized personnel (compromised), the licensee was able to demonstrate that the files were not readily viewable and required interpretation. Therefore, no individuals had an unfair advantage in taking any NRC-related examinations. This issue was documented in the licensee's corrective action program as AR 01348127. Corrective actions for this issue included revising the simulator's software to delete data from the sequence of events files being generated by the simulator until a longer term fix is decided. The licensee's corporate procedure TQ-CL-201-118, "Simulator Examination Security Actions Checklist," added steps to delete data after simulator resets.

The inspectors determined that the failure to control sequence of event files generated by the facility's simulator was a performance deficiency that required an SDP evaluation. The inspectors determined that this finding impacted the Mitigating Systems Cornerstone and consulted IMC 0609, Appendix I, "Operator Requalification, Human Performance," to assess the impact of this issue on examination security. The inspectors concluded that an examination compromise had occurred and the facility had taken immediate compensatory actions to prevent recurrence of this condition. Based on circumstances described above and the licensee's corrective actions, the inspectors concluded that this finding was of very low safety significance (Green).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Bair, Shift Operations Superintendent
K. Baker, Regulatory Assurance Manager
J. Cunningham, Operations Director
C. Dunn, Training Director
R. Frantz, Regulatory Assurance
N. Hightower, Radiation Protection Operations Manager
K. Leffel, Operations Support Manager
D. Kemper, Engineering Director
S. Mohundro, Engineering Programs Manager
W. Noll, Site Vice President
T. Parrent, Fire Protection & IST Program Engineer
J. Peterson, Regulatory Assurance
C. Rocha, Nuclear Oversight Manager
D. Shelton, Operations Services Manager
J. Smith, Senior Manager Plant Engineering
T. Stoner, Maintenance Director
J. Stovall, Radiation Protection Manager
K. Taber, Plant Manager
J. Ufert, Fire Marshall
T. Veitch, Chemistry Manager
J. Wade, Radiation Protection
R. Zacholski, Nuclear Oversight Lead Assessor

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000461/2012003-01	NCV	Failure to Ensure Tornado Missile Protection for Safety Related Components (Section 1R01.4.b.1)
05000461/2012003-02	NCV	Failure to Establish Instructions Appropriate for Installation of Shutdown and Upset Level Instrument Reference Leg Piping (Section 4OA2.2.b.1)

Closed

05000461/2012003-01	NCV	Failure to Ensure Tornado Missile Protection for Safety Related Components (Section 1R01.4.b.1)
05000461/2012003-02	NCV	Failure to Establish Instructions Appropriate for Installation of Shutdown and Upset Level Instrument Reference Leg Piping (Section 4OA2.2.b.1)
05000461/2011-009-00	LER	Missed Surveillance Due to Preconditioning Valve Prior to Leak Rate Test (Section 4OA3.1)
05000461/2011-008-00	LER	Reactor Protection System Actuation and Loss of Shutdown Cooling (Section 4OA3.2)
05000461/2012002-01	URI	Evaluation of Apparent Nonconforming Condition Affecting

		Circulating Water Pump Auto Stop Feature during a Flooding Event (Section 4OA5.1)

Discussed

05000461/2012002-02	NCV	Unacceptable Preconditioning of Low Pressure Coolant Injection from Residual Heat Removal 'A' Check Valve Prior to Leak Rate Test Measurement (Section 4OA3.1)

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- Clinton Power Station UFSAR, Section 3.5, "Missile Protection," Revision 14
- Calculation 85-479, "Diesel Exhaust Rupture Disk," Revision 0A
- Calculation 8.9.1-3, "Tornado Missiles Impact Study on DG Exhaust Systems," Revision 0
- Regulatory Guide 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," March 2007, Revision 1
- NEI 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features," May 2012
- WC-AA-107, "Seasonal Readiness," Revision 10
- OP-AA-108-107, "Switchyard Control," Revision 2
- OP-CL-108-107-1001, "Interface Between AmerenIP and Clinton Power Station for Switchyard Operations, Maintenance, and Engineering," Revision 19
- OP-CL-108-107-1002, "Degraded Grid Actions," Revision 2
- CPS 1860.01C002, "Cold Weather Restoration Checklist," Revision 5d
- CPS 4200.01, "Loss of AC Power," Revision 19c
- CPS 4303.02, "Abnormal Lake Level," Revision 10a
- CPS 4304.01, "Flooding," Revision 5b
- EC 366599, "Install Tornado Missile Shielding and Perform Tornado Missile Analysis," Revision 1
- EC 388873, "Engineering Work Group Evaluation for Functionality," Revision 0
- ECR 400563, "Plan for Temporary Missile Shield for Control Room HVAC 'A' Panel,"
- Revision 0
- Adverse Condition Monitoring and Contingency Plan, "Elevated Lake Temperatures Challenge CPS Operating Parameters," March 20, 2012
- Plant Barrier Impairment Permit #PBI-2012-02-009, "Overhead Door at CB 828," February 8, 2012
- WO 01457493-11, "0VC04CA Remove Grating at OH Door for Fan Replacement," April 13, 2012
- AR 00931875, "Summer Readiness System Review Enhancement"
- AR 01183058, "345 KV Switchyard Walkdown Issues/Results From 3/3/2011"
- AR 01197979, "IER – Flood Seals Do Not Have Periodic Inspection Program"
- AR 01219519, "345 KV Switchyard Walkdown 5/23/11"
- AR 01252496, "Clinton PSS and Exciter Models Do Not Match Amren Models"
- AR 01254499, "SY System Exceeds Maintenance Rule Reliability Criteria"
- AR 01258981, "SY SYS Manager Trending ID GCB 4510 Increased Computer Run Time"
- AR 01259099, "0VV90SA: ERAT SVC Building Found at 87 Degrees"
- AR 01259231, "Unexpected Alarm ERA SVC Trouble – B Charger Hi DC Volts"
- AR 01358080, "Compensatory Missile Shield Not Installed Per Engineering Evaluation"
- AR 01361667, "Ameren Study Shows Stability Issue at CPS SY"
- AR 01363004, "MCR Annunciator 5042-7C, High/Low Differential Pressure Containment"
- AR 01365985, "Initiate ACMP for Summer Operation (IR 1091600)"
- AR 01366027, "EOID: Restoring 1VD05A Needs Procedure Revision to Perform"

- AR 01368593, "IR 1358080 Work Group Evaluation Was Late"
- AR 01370182, "Boards Need Tested to Support Summer Readiness"
- AR 00694902, "CDBI EDG Exhaust Pressure Calculation Inadequacies"

1R04 Equipment Alignment

- CPS 3317.01, "Fuel Pool Cooling and Cleanup," Revision 24d
- CPS 3317.01E001, "Fuel Pool Cooling and Cleanup Electrical Lineup," Revision 13
- CPS 3317.01V001, "Fuel Pool Cooling and Cleanup Valve Lineup," Revision 12
- M05-1037, "Fuel Pool Cooling and Cleanup (FC) Piping and Instrument Drawing"
- UFSAR Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System"
- Clearance Order 00083919, "Clearance to support Clean and Inspect/Thrust Verification for 1FC007, FC Return Inside Containment Isolation Valve"
- CPS 3313.01, "Low Pressure Core Spray (LPCS)," Revision 16b
- CPS 3313.01V001, "Low Pressure Core Spray Valve Lineup," Revision 13a
- CPS 3313.01V002, "Low Pressure Core Spray Instrument Valve Lineup," Revision 8a
- CPS 3313.01E001, "Low Pressure Core Spray Electrical Lineup," Revision 11a
- M05-1073, "P&ID Low-Pressure Core Spray (LPCS) (LP)," Revision AG
- OP-AA-108-117, "Protected Equipment Program," Revision 2
- CPS 3319.01, "Standby Gas Treatment," Revision 16
- CPS 3319.01E001, "Standby Gas Treatment Electrical Lineup," Revision 10c
- CPS 3319.01V001, "Standby Gas Treatment Valve Lineup," Revision 8
- CPS 3319.01V002, "Standby Gas Treatment Instrumentation Valve Lineup," Revision 5a
- AR 01364522, "Locations for Valves in 3319.01V002 Not Correct"

1R05 Fire Protection

- Clinton Power Station UFSAR, Appendix E, "Fire Protection Evaluation Report – Clinton Power Station Unit 1," Revision 14
- Clinton Power Station UFSAR, Appendix F, "Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1," Revision 14
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 11
- CPS 1893.04M720, "762 Turbine: Turbine Auxiliaries Prefire Plan," Revision 6
- CPS 1893.04M730, "777, 781, 783 Turbine: General Access and Mezzanines Prefire Plan," Revision 5
- CPS 1893.04M802, "699 Screen House: 'B' (South) Fire Pump Room Prefire Plan," Revision 6
- CPS 1893.04M722, "762 Turbine: Turbine and Lube Oil Reservoir Prefire Plan," Revision 4
- AR 01362673, "NRC Observation on Pre-Fire Plan"
- AR 01350981, "NRC Sr. Resident Observations in the Turbine Building"
- AR 01360906, "Question About Fire Door Shorting Links Status"
- AR 01372033, "DG-719-01-1007: NRC Observation on Degraded Bisco Seal"
- CC-AA-211, "Fire Protection Program," Revision 4
- OP-MW-201-007, "Fire Protection System Impairment Control," Revision 7
- CPS 1893.04M003, "Prefire Plan Legend," Revision 1
- CPS 1893.04M321, "737 Control: Rad-Chem Lab and Laundry Prefire Plan," Revision 3
- CPS 1893.04M351, "781 Control: Auxiliary Electrical Equipment, Inverter and Battery Rooms Prefire Plan," Revision 7a
- CPS 1893.04M352, "781 Control: Division 1 Cable Spreading Room Prefire Plan," Revision 5
- Calculation IP-M-0177, "Fire Loads in Clinton Power Station"

1R06 Flooding Protection Measures

- CPS Individual Plant Examination (IPE), Section 3.3.8, "Internal Flood Analysis," September 1992
- CPS-PSA-012, "Clinton PRA 2003 Update Internal Flooding Update: Integration of the Internal Flooding Analysis into the Single-Top Model," Revision 0
- Clinton Power Station UFSAR, Revision 14
- NRC Information Notice 2009-006, "Construction-Related Experiences with Flood Protection Features," July 21, 2009
- SL-4576, "Internal Flooding – Safe Shutdown Analysis and INPO SOER No. 85-5 Comparison Evaluation Report" (Sargent & Lundy), January 31, 1990
- A29-1000-01A, "Diesel Generator Building Basement Plan – Area 1," Revision M
- A29-1000-02A, "Diesel Generator Building Basement Plan – Area 2," Revision J
- A29-1000-04A, "Diesel Generator Building Basement Plan – Area 4," Revision D
- A29-1000-05A, "Diesel Generator Building Basement Plan – Area 5," Revision E
- AR 01373446, "NRC Identified Potential Issue With Radwaste Tank Room Floor Drains"
- NRC Generic Letter 2007-01: Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," February 7, 2007
- NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables," March 21, 2002
- NRC Information Notice 2010-26, "Submerged Electrical Cables," December 2, 2010
- ER-AA-3003, "Cable Condition Monitoring Program," Revision 0
- AR 01368767, "Cable Vault Manway Covers Can Not Be Opened"
- AR 01376997, "Cable Vault Sump Pump Out of Position"

1R11 Licensed Operator Requalification Program

- CPS 3304.02, "Rod Control and Information System (RC&IS)," Revision 18e

1R12 Maintenance Effectiveness

- Clinton Power Station UFSAR, Revision 14
- Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2 March 1997
- 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
- CPS 9061.06C006, "Containment Ventilation and Drywell Purge Isolation Valve Operability Checklist," Revision 38
- WO 01307005-03, "1VQ004A 9061.06 Stroke Time Too Fast – Perform Flowscan of 1FZVQ033, 1VQ004A Valve Actuator"
- WO 01307006-03, "1VQ004B 9061.06 Stroke Times Too Fast – Perform Flowscan of 1FZVQ031, 1VQ004B Valve Actuator"
- AR 01024018, "1VQ004A 9061.06 Stroke Times Too Fast"
- AR 01024020, "1VQ004B 9061.06 Stroke Times Too Fast"
- AR 01162719, "IST Program Health Report – Equipment Degradation Performance Indicator Rated Red"
- AR 01204507, "IST Program Health Rated Yellow, 1st Quarter"
- AR 01270031, "Nuclear Oversight Identified Service Request for Preventive Maintenance Deferral Has Inadequate Technical Justification"

- AR 01273149, "Apparent Ineffective Maintenance for 1VQ004A and 1VQ004B"
- AR 01282407, "1VQ004A/B Will Be IST Inoperable for Cycle 14"
- AR 01295205, "1VQ004A: Data Out of Tolerance"
- AR 01297536, "1VQ004B: C1R13 Actuator Air Leak and Jerky Valve Stroke"
- AR 01365460, "1FZVQ033: NRC Identified Apparent Out-of-Specification on Vaulted Record"

1R13 Maintenance Risk Assessments and Emergent Work Control

- CPS 9061.10, "Fuel Pooling Cooling Valve Operability," Revision 45b
- OP-AA-108-117, "Protected Equipment Program," Revision 2
- HU-AA-104-101, "Procedure Use and Adherence," Revision 4
- Completed OP-AA-108-117 Attachment 1, "Protected Equipment Work Approval Form"
- WO 01412992, "1FC02PA Comprehensive Pump Test"
- WO 01528469, "OP Fuel Pool Cooling Pump 1A and 1B Valve Testing"
- WO 01528474, "OP FC HX CC 'B' Valves (1CC075B and 1CC076B Only)"
- WO 01503315, "Calibrate 4160 Volt Bus 1A1 Voltage Indication Loop and Indicators"
- CR 01323827, "Potential Design Vulnerability: Single Open Phase (including associated Operability Evaluation)"
- ER-AA-600, "Risk Management," Revision 6
- ER-AA-600-1012, "Risk Management Documentation," Revision 9
- ER-AA-600-1042, "On-Line Risk Management," Revision 7
- WC-AA-101, "On-Line Work Control Process," Revision 18
- WC-AA-104, "Integrated Risk Management," Revision 18
- Clinton Power Station Technical Specifications
- Prompt Investigation 1377197, "1E12-F024B Thermals Tripped During Surveillance 9053.07"
- Prompt Investigation 1378165, "RR 'A' Flow Control Valve Locked Out"
- WO 00869395, "Open Conduit in Div 3 DG Fuel Oil Storage Tank Room Wall"
- WO 01549628, "Troubleshoot 1E12-F024B/RHR B Test Valve to Suppression Pool"
- AR 00397288, "Open Conduit In Division 3 Diesel Fuel Oil Storage Tank Room Wall"
- AR 01371769, "NRC Question on Open Conduit In Division 3 DG Tank Room Wall"
- AR 01377197, "1E12F024B: Thermals Tripped During Surveillance 9053.07"
- AR 01377290, "Received External Fail (Flow Problem) On 1RIX-PR039"
- AR 01377659, "1RIX-PR009D Spiking"
- AR 01378165, "RR 'A' Flow Control Valve Locked Out"

1R15 Operability Evaluations

- CPS 2700.13, "Division 2 SX System Flow Balance Verification," Revision 6.
- AR 01377717, "Results from Div 2 SX Flow Balance," June 14, 2012
- AR 00797672, "Inaccurate Reportability Review for Div 2 SX Flow Balance," July 2, 2008
- Engineering Evaluation 1-98-09-201-0, September 16,1998
- Calculation IP-M-0486, "SX Hydraulic Network Analysis Model and Flow Balance Acceptance Criteria," Revision 6.
- Clinton Power Station Technical Specifications
- Clinton Power Station Updated Final Safety Analysis Report, Revision 14
- NRC Regulatory Issue Summary 2005-20, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," Revision 1
- AR 01344501, "Free Air Cable Deficiencies Located in TCFZs"
- AR 01358295, "Free Air Cables Attached to FP Piping"

- EC 0000389042, "(GL-86-10-2012-05-01) Clinton Power Station (CPS) Fire Protection Program: Evaluation of Impact of Free Air Cables Traversing Transient Combustible Free Fire Zones (TCFZs)," Revision 0
- NRC Inspection Manual Part 9900: Technical Guidance, "Operability Determinations & Functionality Assessments For Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," April 16, 2008
- NRC Event Notification #47706, "Part 21 Report - Potential Minimum Wall Violation On Seismic Plate Valve Bodies," February 28, 2012
- OP-AA-108-115, "Operability Determinations," Revision 10
- Prompt Investigation 1334761, "1VD01YA Hydramotor Coupling Disconnected"
- EACE 1334761-06, "1VD01YA Hydramotor Coupling Disconnected (Division 1 DG Run)"
- EC 388062, "Part 21 – 8 Inch Butterfly Valve Event #47706," Revision 0
- Operability Evaluation 1334687-02, "Part 21 – 8 Inch Butterfly Valve Event #47706"
- Calculation # IPC-009, "Seismic qualification of MOVs 1SX063A and 1SX063B," Revision 4
- Calculation # IPC-010, "Seismic qualification of MOVs 1FC016A/B, 1FC024A/B, 1SX008C and 1SX014C, and 1SX017A/B," Revision 4
- AR 01334687, "Part 21 – 8 Inch Butterfly Valve Event #47706"
- AR 01334761, "1VD01YA Hydramotor Coupling Disconnected (Division 1 DG Run)"

1R18 Plant Modifications

- WO 1503104-01, "Install EC 386212 for 1E12F037A"
- EC 386212, "Open Breaker and Defeat OOS Alarm for 1E12F037A," Revision 0.
- AR01375422, "MSO Modifications to PCIV's," June 7, 2012
- AR01375802, "EC386212 on 1E12F037A Needs Further Review," June 8, 2012
- EC 388217, "Transfer Water From Containment Equipment Drain Sump to Containment Floor Drain Sump Using Siphon Hose," Revision 0
- ODM 01308230, "Elevated and Erratic Drywell Equipment Drain In-Leakage Indication," February 29, 2012
- WO 01523320-01, "Install TMOD EC 388217 To Siphon Containment Equipment Drain To Floor Drain"
- M05-1047, "P&ID Containment Building Floor Drain System (RF)," Sheet 3, Revision M
- M05-1046, "P&ID Containment Building Equipment Drain System (RE)," Sheet 3, Revision M
- M05-1046, "P&ID Containment Building Equipment Drain System (RE)," Sheet 4, Revision U
- AR 01358535, "Procedure Change Needed to 3402.01"
- AR 01358526, "NRC Noted Housekeeping Issues at 737' CT RE/RF Sump Area"
- AR 01085217, "Perform PMS Or Design Change – IS System Abandonment"
- AR 01257164, "1H13P661: Hot Short Concern"
- AR 01234815, "Procedure Enhancement – EC Incorporation"
- AR 01226445, "VC Shifting Procedure Not Updated"
- AR 01234026, "Test Equipment Installed At MCR XL-3 Panel For Over 6 Months"
- AR 01208022, "WW 1116 Issue For Possible Multi Divisional EC Error"
- AR 01203162, "EC 378419 Removed RR Loop Drain Line From Service"
- AR 01128051, "Excessive Voltage Applied To New EDG A3 Speed Switches"
- EC 371540, "Install Blind Coupling Outside Containment Penetration 1MC116 and Abandon the Penetration Isolation Valves 1C41F340B/F341B," Revision 1

1R19 Post-Maintenance Testing

- WO 01503104, "Install Engineering Change 386212"

- WO 01550757, WO 01503104, "Install Engineering Change 386212, specifically Tasks 20 and 26, 38 and 41, and 39 and 42 associated with controller replacement and PMT (component and loop calibrations) for 0FIC-VC072, OTIC-VC035, and OTIC-VC035 respectively"
- MA-AA-716-012, "Post Maintenance Testing," Revision 16
- WO 01535121-01, "Replace Voltage Regulator Monitor Card AR11XZ324 in APRM 'A' (H13P669)"
- CPS 9431.12, "Average Power Range Monitor (APRM) Channel Calibration 24 Month," Revision 51h
- AR 01372175, "1H13P669: Procedure 94311.12 Needs Minor Revision"
- CPS 4008.01, "Abnormal Reactor Coolant Flow," Revision20a
- WO 1150760-15, "Replace 1B33A215 RR HPU Servo Valve"
- WO 01308704, "OP PMT 1B33D003A Pump A-1 Replacement"
- WO 01432933, "OP 9170.01 MCR HVAC CW 0VC08PB Comprehensive Pump 'B' Test"
- WO 01455835, "0VC05CA Baker Testing of MCR Make Up Air Fan Motor"
- WO 01457493, "Replace 0VC04CA Per EACE 1225739"
- WO 01508369, "OP 9170.01 MCR HVAC Chill Water Pump 'B' Operability"
- WO 01510054, "9170.02A20 OP VC 'A' Valve Operability"
- AR 01352675, "CB Pump 'B' Auxiliary Oil Pump 1CS07PB Did Not Stop Following"
- AR 01359148, "Fan Differential Pressure Outside Band Set By System Manager"
- AR 01378499, "EOID: RR HPU A1 Subloop Would Not Pressurize Above 400#"
- AR 01378574, "Inadequate HPU Pressure After Relief Valve Is Replaced"
- AR 01378592, "OP-AA-101-113-1006, 4.0 Crew Critique For RR 'A' Lockout"
- AR 01378635, "EOID: RR HPU A1 Fan Motor Cable C7765 Degraded"
- AR 01380134, "1B33F060A: Servo Error Erratic Behavior on a FCV Meter"
- AR 01380934, "RR-1B33K695A Incorrectly Classified as a Critical Component"

1R22 Surveillance Testing

- Clinton Power Station Technical Specifications,
- Clinton Power Station Updated Final Safety Analysis Report, Revision 14
- Clinton Nuclear Power Station Unit 1, "Inservice Testing Program Plan – Third Ten Year Interval," Revision 3
- IST Pump Evaluation Report 86, Pump EPN: 1E51-C001, June 16, 2006
- IST-CPS-BDOC-V-24, "Clinton Inservice Testing Bases Document – Reactor Core Isolation Cooling System," Revision 12
- EC 385398, "Acceptance Criteria for Comprehensive Pump Test Procedures," Revision 0
- EC 388342, "Comprehensive Pump Test Acceptance Criteria for ECCS Waterleg Pumps," Revision 1
- CPS 9813.01, "Control Rod Scram Time Testing," Revision 39c
- CPS 9813.01C001, "Control Rod Scram Timing Checklist," Revision 32e
- CPS 9813.01D006, "Control Rod Scram Time Option B 20% Insertion Calculation," Revision 31
- CPS 9813.01D007, "Control Rod Scram Time Option B OLMCPR Calculation," Revision 31
- CPS 9813.01D003, "Scram Time Testing – Containment Data Sheet," Revision 31
- CPS 9813.01D004, "Scram Time Testing – MCR Data Sheet," Revision 31
- CPS 9054.01C002, "RCIC (1E51-C001) High Pressure Operability Checks," Revision 1d
- CPS 9054.01C004, "Combined RCIC (1E51-C001) High Pressure Operability Checks and RCIC Cold Quick Restart," Revision 3b
- CPS 9054.01D002, "RCIC (1E51-C001) High Pressure Operability Checks Checklist," Revision 22c

- CPS 9054.01D004, "Combined RCIC (1E51-C001) High Pressure Operability Checks and RCIC Cold Quick Restart Checklist," Revision 2b
- WO 01478101-01, "9080.01A22 OP DG 1A Operability – Monthly Test"
- AR 01345833, "1FC004A Stroked Too Quickly During 9061.10"
- AR 01197257, "WW 1119 Channel Cals Put CPS In 12 Hour Shutdown Statement"
- AR 01196188, "NRC Questions Regarding 9080.24"
- AR 01111909, "Pressure Switches 1PS-FP364 & 1PS-FP362 Fail Surveillance"
- AR 01055599, "1E12-F004A: MOV PM Scheduled Beyond Its Late Date"
- AR 01254993, "9861.09 Acceptance Criteria Needs Validation"
- AR 01063677, "RHR A Valve OP 9053.04C001 Procedure Change"
- AR 01250386, "IFTS Test Set 'C' Failed LLRT"
- AR 01287900, "9861.03D003 IFTS LLRT Total Leakage Exceeds 944 SCCM"
- AR 01264918, "1SX169C: Valve Leak By"
- AR 01281646, "Missed Step 8.2.7.1 And 8.2.7.3 Of 9080.01 During DG Run"
- AR 01360817, "9054.01C004 Gauge Installation Steps Missing"
- AR 01361225, "RCIC Not Set Up For Cold Quick Restart Test"
- EC 385398, "Acceptance Criteria for Comprehensive Pump Test Procedures," Revision 0
- CPS 3506.01C001, "Diesel Generator 1A Pre-Start Checklist," Revision 14a
- CPS 3506.01C005, "Diesel Generator Start Log," Revision 1a
- CPS 3506.01D001, "Diesel Generator 1A Operating Logs," Revision 2a
- CPS 9080.01, "Diesel Generator 1A Operability – Manual and Quick Start Operability," Revision 53c
- CPS 9080.01D001, "Diesel Generator 1A Operability – Manual and Quick Start Data Sheet," Revision 44d
- CPS 9080.12, "Diesel Generator Fuel Oil Transfer Pump Operability," Revision 36b
- CPS 9080.12D001, "Diesel Generator Fuel Oil Transfer Pump Operability Data Sheet," Revision 32d
- CPS 9080.13, "Diesel Generator 1A (1B) 24 Hour Run and Hot Restart - Operability," Revision 41
- CPS 9080.13,D001 "Diesel Generator 1A (1B) 24 Hour Run and Hot Restart Data Sheet," Revision 34b
- WO 01369416-01, "9080.13A20 OP DG 1A 24 Hour Run and Hot Restart"
- WO 01534846-02, "9080.01A22 OP DG 1A Operability – Monthly Test"
- AR 01365735, "Potential Impact To EC 385398 Criteria"

2RS2 Occupational ALARA Planning and Controls

- AR 01300289, "C1R13 600 Trinuc Filter System Hose Placement," dated December 9, 2011
- AR 01300302, "C1R13 600 Trinuc 0.1 Micron Pall Filters," dated December 9, 2011
- AR 01302135, "RT Water Clean Up Filter Demin B," dated December 14, 2011
- AR 01313140, "C1R13 Dose Overage," dated January 13, 2012
- Clinton Power Station C1R13 Post-Outage Report, dated Fall 2011
- CY-AB-120-100, "Reactor Water Chemistry," Revision 13
- CY-AB-120-130, "BWR Shutdown Chemistry," Revision 9
- Radiation Protection 2012 Excellence Plan, dated March 30, 2012
- Radiation Protection Outage Control Center C1R13 Logs, Various Dates
- RP-AA-210, "Dosimetry Issue, Usage, and Control," Revisions 20, 21, and 22
- RP-AA-400, "Outage Exposure Estimating and Tracking," Revision 3
- RP-AA-401-1002, "Radiological Risk Management," Revision 2
- RP-AA-460-1006, "Controls for the Replacement of Incore Detectors and Associated Components," Revision 0

- RP-AA-4002, "Radiation Protection Refuel Outage Readiness," Revision 6
- RWP 10012062, "C1R13 Drywell ISI Inside Bio Shield," Revision 0
- RWP 10012130, "Reactor Disassembly / Reassembly – Cavity," Revision 1
- RWP 10012131, "Reactor Disassembly / Reassembly – Floor," Revision 0
- RWP 10012132, "C1R13 Fuel Moves," Revision 0
- RWP 10012133, "Reactor Vessel IVVI-ISI." Revision 1
- Shift Outage Manager Outage Control Center C1R13 Logs, Various Dates
- Station ALARA Committee Meeting Minutes, Various Dates 2011 and 2012

4OA1 Performance Indicator Verification

- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- CL-MSPI-01, "Clinton MSPI Basis Document," Revision 7
- MSPI Derivation Report, Clinton Unit 1, March 2012, April 17, 2012
- AR 01250779, "DG Prestart Unavailability Tracking Enhancement"
- AR 01297512, "1DG01KA16: Division 1 DG Failed To Start"
- AR 01214578, "1DG01KB: D2 DG Tripped During 9080.02"
- AR 01247127, "Div 2 EDG Fault Exposure Hours From OS Trip"
- AR 01321557, "System Health 4th Qtr Challenge Board 31Jan12"
- AR 01033110, "1DG01KC Unavailability Due To Loop 1VD009 System Test"
- AR 01290861, "Div 3 SX Pump Replacement And Impact On SSPI/MSPI"
- AR 01314706, "1DG01KC: Div 3 DG Emergency Stopped Due To Fuel Oil Leak"
- AR 01188252, "1DG01KB Did Not Achieve Rated Frequency Within Criteria"

4OA2 Identification and Resolution of Problems (71152)

- Event Notification #47533, "Reactor Protection System Actuation and Loss of Shutdown Cooling," December 18, 2011
- ER-AA-2006, "Lost Parts Evaluations," Revision 7
- Root Cause Report #1304323, "RPV Level 3 SCRAM Signal Actuation During Refueling Outage C1R13," January 17, 2012
- Prompt Investigation 1304323-02, "1B21N027: RPV Level 3 Actuation," December 18, 2012
- Letter from R. Zacholski, Clinton NOS to W. Noll, et. al., "NOS Review Board – Clinton Root Cause Report (RPV Level 3 SCRAM Actuation during Refueling Outage C1R13)," February 20, 2012
- EC 389594, "HPCS Test Return Line Hanger Damaged," Revision 0
- CPS 3007.01, "Preparation and Recovery from Refueling Operations," Revision 15c
- CPS 8801.06C001, "H22 Panel Mounted Instrument Valve Operation Checklist," Revision 33c
- CPS 8801.12C001, "Local Mounted Instrument Valve Operation Checklist," Revision 15b
- WO 01356651-01, "Perform Backfill of Sensing Line When Reactor Vessel Head Piping is Restored"
- AR 01304264, "Vacuum Drawn on RPV During C/O 98146 Placement"
- AR 01304323, "1B21N027: RPV Level 3 Actuation"
- AR 01325024, "As Found Data Outside Allowable Limit for 9431.04D002 8.2.13"
- AR 01325309, "NOS ID: NIRB for Root Cause of Level 3 Scram in C1R13"
- AR 01380222, "5 Items Discovered on the Bottom of the Suppression Pool"
- AR 01380555, "HPCS Test Return Line Hanger Damaged"
- AR 01380720, "Item Discovered on the Bottom of the Suppression Pool"

4OA3 Follow-up of Events and Notices of Enforcement Discretion

- Clinton Power Station Technical Specifications
- LER 05000461/2011-008-00, "Reactor Protection System Actuation and Loss of Shutdown Cooling"
- LER 05000461/2011-009-00, "Missed Surveillance Due to Preconditioning Valve Prior to Leak Rate Test"

4OA5 Other

- Clinton Power Station Updated Final Safety Analysis Report, Revision 14
- NUREG 0853, "Safety Evaluation Report related to the operation of Clinton Power Station, Unit No. 1," February 1982
- AR 01355130, "NRC URI for CW Pump Trip Logic"

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agency-wide Documents and Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
APRM	Average Power Range Monitor
BI	Barrier Integrity
BWR	Boiling Water Reactor
CNO	Chief Nuclear Officer
CRD	Control Rod Drive
CV	Containment Venting
CW	Circulating Water
DG	Diesel Generator
EC	Engineering Change
ECR	Engineering Change Request
°F	Degrees Fahrenheit
gpm	gallons-per-minute
HEP	Human Error Probability
HPCS	High Pressure Core Spray
HVAC	Heating, Ventilation, and Air Conditioning
IE	Initiating Event
IEL	Initiating Event Likelihood
IM	Instrument Maintenance
IMC	Inspection Manual Chapter
IST	Inservice Testing
LER	Licensee Event Report
LERF	Large Early Release Frequency
LORHR	Loss of the Operating Train of Residual Heat Removal
LPCI	Low Pressure Coolant Injection
LPCS	Low Pressure Core Spray
MCR	Main Control Room
MINJ&SRV	Manual High Pressure Injection & RCS Pressure Control
MINJY	Manual High Pressure Injection
MOV	Motor Operated Valve
MS	Mitigating Systems
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OOS	Out-Of-Service
PARS	Publicly Available Records
PBI	Plant Barrier Impairment
PIV	Pressure Isolation Valve
POS	Plant Operating State
PSF	Performance Shaping Factors
psig	pounds-per-square-inch-gauge
PWR	Pressurized Water Reactor
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RHRREC	Residual Heat Removal Recovery

RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RWCU	Reactor Water Cleanup
SDP	Significance Determination Process
SSCs	Structures, Systems, and Components
SX	Shutdown Service Water
TCFZ	Transient Combustible Free Zone
TS	Technical Specification
TSO	Transmission System Operator
TSSR	Technical Specification Surveillance Requirement
UFSAR	Updated Final Safety Analysis Report
VC	Control Room Ventilation
VG	Standby Gas Treatment

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/

Mark A. Ring, Branch Chief
Branch 1
Division of Reactor Projects

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

cc w/encl: Distribution via ListServ

DOCUMENT NAME: CLIN 2012 003.docx
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive
To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	Clinton RIO	E	RIII	N	RIII	E	RIII
NAME	MRing:dtp						
DATE	08/06/12						

OFFICIAL RECORD COPY

Letter to M. Pacilio from M. Ring dated August 6, 2012

SUBJECT: CLINTON POWER STATION - NRC INTEGRATED INSPECTION REPORT 05000461/2012-003

DISTRIBUTION:
Silas Kennedy
RidsNrrDorlLpl3-2 Resource
RidsNrrPMClinton Resource
RidsNrrDirsIrib Resource
Chuck Casto
Cynthia Pederson
Steven Orth
Jared Heck
Allan Barker
Carole Ariano
Linda Linn
DRSIII
DRPIII
Patricia Buckley
Tammy Tomczak
ROPreports.Resource@nrc.gov