



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

January 25, 2010

Mr. Charles G. Pardee  
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  
05000461/2009-005

Dear Mr. Pardee:

On December 31, 2009, 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 January 7, 2010, with Mr. F. Kearney 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, two self-revealed findings of very low safety significance were identified. Both findings were determined to involve violations of NRC requirements. Because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating the above violations as Non-Cited Violations (NCVs) consistent with Section VI.A.1 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, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Clinton Power Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement to the Regional Administrator, Region III, and the NRC Resident Inspector at Clinton Power Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

C. Pardee

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 document system (ADAMS), accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

***/RA/***

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

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

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2009-005

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station, Unit 1

Location: Clinton, IL

Dates: October 1 through December 31, 2009

Inspectors: B. Kemker, Senior Resident Inspector  
D. Lords, Resident Inspector  
J. Bozga, Reactor Engineer  
E. Coffman, Reactor Engineer  
J. Draper, Reactor Engineer  
D. McNeil, Senior Operations Engineer  
D. Reeser, Operations Engineer  
G. Roach, Senior Resident Inspector, LaSalle  
S. Mischke, Resident Inspector, Illinois Emergency  
Management Agency

Approved by: M. Ring, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000461/2009-005, 10/01/09 – 12/31/09, Clinton Power Station, Unit 1, Identification and Resolution of Problems, Follow-Up of Events and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by the resident inspectors and announced baseline inspections by regional inspectors. Two Green findings, both 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: Initiating Events**

- Green. A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 29, 2009, when a steam leak developed from the reactor core isolation cooling (RCIC) system inboard steam isolation valve (1E51F0063) stem packing. This resulted in a plant shutdown due to a greater than 2 gallons-per-minute increase in unidentified reactor coolant system (RCS) leakage within the previous 24 hours. Subsequent investigation revealed that maintenance craftsmen had failed to correctly tighten the valve packing gland nuts to the as-left torque value from original packing installation when performing scheduled maintenance to verify the as-found torque value in 2006. As corrective action, the licensee replaced the 1E51F0063 valve stem packing during the subsequent forced outage and tightened the gland nuts to the correct torque value.

The finding was of more than minor significance because it was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to correctly tighten the valve stem packing gland nuts resulted in stem packing failure and a subsequent plant shutdown due to exceeding the Technical Specification (TS) limit for an increase in unidentified RCS leakage. Although the finding resulted in exceeding the TS limit for RCS leakage, it was determined to be of very low safety significance during a Phase 2 Significance Determination Process review because there was no loss of mitigation capability for any safety system and therefore no resultant change in core damage frequency. Because the performance issue was associated with maintenance performed in February 2006, it did not necessarily reflect current licensee performance and no cross-cutting aspect was identified. (Section 4OA2.2.b.1)

#### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 23, 2009, when the Division 3 diesel generator (DG) was

found to have had two components installed incorrectly. Electrical maintenance technicians had incorrectly replaced time delay relays K-8A and K-32 on September 24, 2007, essentially swapping the locations of the two relays. This rendered the Division 3 DG inoperable for about two years and resulted in a loss of safety function for the Division 3 DG and high pressure core spray system under a certain sequence of initiating events. As immediate corrective action, the licensee restored the two time delay relays to the correct configuration and immediately verified that the remaining time delay relays inside the Division 3 DG Control Panel were in their proper locations.

The finding was of more than minor significance because, if left uncorrected, it would potentially lead to a more significant safety concern (i.e., the inoperability of risk-significant plant safety systems). In addition, based on review of Example 5c in Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," the issue would be considered to be of more than minor significance because the incorrect relays were installed in the control panel. Although the finding resulted in a loss of safety function for the Division 3 DG and high pressure core spray system, it was determined to be of very low safety significance during a Phase 2 Significance Determination Process review considering the very limited conditions (i.e., only for 45 seconds following shutdown of the engine concurrent with a design basis accident) when the Division 3 DG was incapable of performing its safety function. The resultant exposure time was estimated to be about 27 minutes during the 2-year period. The inspectors concluded that this finding affected the cross-cutting area of human performance because the licensee did not effectively communicate expectations regarding procedural compliance and; as a result, maintenance technicians did not follow their procedures by installing nonconforming components and restoring the safety system to service. (IMC 0305 H.4(b)) (Section 4OA3.3.b.1)

**B. Licensee-Identified Violations**

No violations of significance were identified.

## **REPORT DETAILS**

### **Summary of Plant Status**

Unit 1 was shutdown in Mode 4 (Cold Shutdown) at the beginning of the inspection period to determine the location of an unidentified reactor coolant system (RCS) leak. The unit was operated at or near full power during the inspection period with the following exceptions:

- On September, 29, 2009, the licensee initiated a plant shutdown required by Technical Specification (TS) 3.4.5, "RCS Operational Leakage," due to a greater than 2 gallon-per-minute increase in unidentified leakage within the previous 24 hours. After the unit was shut down, the licensee entered the drywell and identified that the leak was from the reactor core isolation cooling (RCIC) system inboard steam isolation valve stem packing. On October 2nd, the licensee restarted the unit following repairs to the valve and some additional plant maintenance. The licensee synchronized the unit to the grid and returned it to full power on October 4th.
- On October 15, 2009, the unit was manually scrammed from full power following an unexpected trip of the 'B' reactor recirculation pump. Operators manually scrammed the reactor just before reactor vessel water level reached the Level 8 (high level) reactor scram setpoint. After the unit was shut down, the licensee identified that the pump motor had failed due to an internal electrical fault. On October 24th, the licensee restarted the unit following replacement of the pump motor and some additional plant maintenance. The licensee synchronized the unit to the grid October 25th and returned it to full power on October 26th.
- On November 14, 2009, the licensee reduced power to about 82 percent to perform control rod pattern adjustments and control rod settle testing. The licensee returned the unit to full power later the same day.
- On November 25, 2009, the licensee began end-of-cycle power coast down operation on the unit.
- On December 2, 2009, the licensee removed high-pressure feedwater heaters 6A and 6B from service to lower feedwater temperature and increased reactor power to near full power operation. The licensee re-commenced end-of-cycle coast down operation of the unit on December 7th. The unit was operating at about 90 percent power at the end of the inspection period.

### **1. REACTOR SAFETY**

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

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

##### **.1 Readiness For Impending Cold Weather Conditions**

##### **a. Inspection Scope**

The inspectors evaluated the licensee's preparations for cold weather conditions, focusing on the Plant Service Water System and the Turbine Building Ventilation

System. The inspectors focused on plant-specific design features and implementation of procedures for responding to or mitigating the effects of cold weather conditions on the operation of the plant. The inspectors reviewed system health reports and system engineering winter readiness review documents for the above systems. Additionally, the inspectors reviewed selected action requests for the identification and resolution of procedure and equipment deficiencies associated with adverse weather mitigation.

This inspection constituted one seasonal extreme weather readiness inspection sample as defined in Inspection Procedure (IP) 71111.01.

b. Findings

No findings of significance were identified.

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:

- Residual Heat Removal (RHR) Train 'A' with RHR Train 'B' operating in shutdown cooling mode;
- Component Cooling Water Train 'B' during maintenance on the Train 'A' Component Cooling Water Heat Exchanger; and
- Low Pressure Core Spray (LPCS) System (single train risk-significant system).

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones. The inspectors reviewed operating procedures, system diagrams, TS requirements, and the impact of ongoing work activities on redundant trains of equipment. The inspectors verified that conditions did not exist that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components were aligned correctly and available as necessary.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's 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 quarterly 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 D-8, Division 1 Diesel Generator HVAC [Heating, Ventilation and Air Conditioning] Room Elevation 762'0";
- Fire Zone F-1a, Fuel Building General Access Area – Elevation 712'0";
- Fire Zone F-1p, Fuel Pools and General Access Area – Elevation 755'0"; and
- Fire Zone F-1m, Fuel Building General Access Area – Elevation 737'0".

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 four quarterly fire protection inspection samples as defined in IP 71111.05AQ.

b. Findings

(1) Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program

Introduction

The inspectors identified that the licensee failed to implement its Fire Protection Program in accordance with program requirements by failing to follow approved Fire Protection Program procedures for the control of transient combustible materials. This issue is considered to be an Unresolved Item pending additional review by the inspectors to determine whether the performance deficiency is of more than minor safety significance.

Discussion

On September 29, 2009, with Unit 1 operating in Mode 1, the inspectors identified unattended transient combustible items (a plastic container with about one quart of Mobil DTE 26 motor oil, a plastic container with about one pint of Syn-Air lubricating oil, an empty collapsible plastic container, a plastic bottle half-filled with what appeared to be a soap-bubble and water solution used for leak detection on pipe fittings, two paper

towels, and other assorted small debris items) underneath two air receiver tanks in the Division 1 Diesel Generator Ventilation Fan Room on the Diesel Generator Building 762' elevation. The area in which these transient combustible items were found contained highly visible red striped paint on the floor and markings indicating the area to be a "Combustible Free Zone" as described in the Clinton Power Station Fire Protection Evaluation Report (Updated Final Safety Analysis Report (UFSAR), Appendix E) or; alternatively, a "Transient Combustible Free Zone" (TCFZ) as described in OP-AA-201-009, "Control of Transient Combustible Material," Attachment 5, "Clinton – Station Specific Information," Revision 9. As stipulated in Attachment 5 of OP-AA-201-009, the placement of transient combustible materials in these areas without prior approval in the form of a Transient Combustible Permit and Plant Barrier Impairment and additional compensatory measures is prohibited in Modes 1, 2, and 3. Neither a Transient Combustible Permit nor a Plant Barrier Impairment was approved for these transient combustible items and no compensatory measures had been established. The procedure further stated that the TCFZs at Clinton Power Station are provided for the purpose of separating redundant safe shutdown equipment. According to the Fire Protection Evaluation Report, redundant safe shutdown equipment of concern for the Division 1 Diesel Generator Ventilation Fan Room included equipment to support operation of the Division 1 DG and main power feed cables for the Division 2 DG. Consequently, a fire in the room could result in the loss of power from both the Division 1 and Division 2 DGs. Upon discovery, the inspectors promptly notified the licensee and the items were removed. The items discovered were determined to be Class A and Class B materials as defined in OP-AA-201-009. It is unknown when these items were placed underneath the air receivers.

The inspectors reviewed the licensee's condition evaluation of this issue. The licensee concluded that the items had likely been under the air receiver tanks for several years based on the layer of dust covering them, but not until sometime after mid-2001 based on the style of the labels found on the containers. The licensee attributed the cause to the difficulty in finding the items without extra effort to look into areas not normally used for storage of materials. The inspectors previously documented findings during the fourth quarter of 2007, first quarter of 2008, and fourth quarter of 2008 involving the licensee's failure to follow approved Fire Protection Program procedures for the control of transient combustible materials. Those findings were attributed to poor worker behaviors with storing or staging work materials in TCFZs and inadequate walk downs of the plant's TCFZs. The licensee noted in its evaluation that corrective actions for these findings included several walk downs of the plant's TCFZs to identify and remove materials as an extent of condition investigation; however, these walk downs were not sufficient to identify and remove all transient combustible materials since items were found after each walk down. The inspectors noted that the unattended transient combustible items were readily visible by dropping to one knee and looking under the air receiver tanks with a flashlight. The licensee's immediate corrective action for this issue was to remove the combustible items from the TCFZ. The licensee has subsequently changed its UFSAR and plant procedures to allow some "negligible quantities" of combustible materials inadvertently or accidentally left within the TCFZs based upon an engineering evaluation. The inspectors have requested assistance from a regional fire protection specialist to review the licensee's engineering evaluation and UFSAR changes. This issue is considered to be an **Unresolved Item (URI 05000461/2009005-01)** pending additional review to determine whether the performance deficiency is of more than minor safety significance. The licensee entered this issue into its corrective action program as Action Request (AR) 00972704.

1R06 Flooding Protection Measures (71111.06)

.1 Underground Vaults

a. Inspection Scope

During this inspection period, the licensee opened and dewatered 17 underground cable vaults containing risk-significant safety-related and nonsafety-related power and control cables; evaluated the material condition of the vaults, cables, and cable supports; and installed a plant modification (sump pumps and level alarm switches) to maintain the vaults dewatered. The inspectors verified that cables were not significantly degraded due to prolonged submergence in water, that cable splices were intact, and that appropriate cable support structures were in place. The inspectors reviewed the licensee's corrective actions, which were implemented to address a previous inspector-identified violation from 2007 involving continuously submerged cables in the underground cable vaults.

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 Regualification Program (71111.11)

.1 Facility Operating History (71111.11B)

a. Inspection Scope

The inspectors reviewed the plant's operating history from November 2007 through October 2009 to identify operating experience that was expected to be addressed by the Licensed Operator Regualification Training (LORT) Program. The inspector verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) Program to satisfy the requirements of 10 CFR 55.59(c). The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.2 Licensee Regualification Examinations

a. Inspection Scope

The inspectors performed an inspection of the licensee's LORT test/examination program for compliance with the station's SAT Program, which would satisfy the requirements of 10 CFR 55.59(c)(4). The reviewed operating examination material consisted of two operating tests, each containing two dynamic simulator scenarios and six job performance measures (JPMs). The written examinations reviewed consisted of

four Part B, Administrative Controls/Procedure Limits written examinations. Each examination contained approximately 30 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test. The examiners assessed the amount of written examination material duplication from week-to-week for the written examination administered in 2007. The inspectors reviewed the methodology for developing the examinations, including the LORT Program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.3 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4). The inspectors evaluated the performance of one crew in parallel with the facility evaluators during two dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented in the section below titled, "Conformance with Simulator Requirements Specified in 10 CFR 55.46." The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.4 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination

process. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified. However, during validation of the JPM portion of the operating test, one JPM cue sheet was momentarily uncontrolled. When discovered by the validating instructor, the sheet was retrieved and the JPM replaced. Because the missing sheet was discovered promptly and replaced, it was concluded that no compromise of the operating test had occurred. Although no findings of significance were identified concerning examination security, this momentary loss of examination security is required to be documented.

.5 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT Program up-to-date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT Program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59(c) and the licensee's SAT program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.6 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. This evaluation was performed in accordance with 10 CFR 55.59(c) and with respect to the licensee's SAT Program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.7 Conformance with Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT Program to assess compliance with the requalification program requirements as described by 10 CFR 55.59(c). Additionally, medical records for 12 licensed operators were reviewed for compliance with 10 CFR 55.53(l). The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.8 Conformance with Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, malfunction tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46(c) and (d). The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.9 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the biennial written examination, the individual JPM operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from November 2, 2009,

through December 15, 2009, as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The documents reviewed during this inspection are listed in the Attachment to this report.

Completion of this section constituted one biennial licensed operator requalification inspection sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

.10 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

The inspectors observed licensed operators during simulator training on November 5, 2009. 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 sample as defined in IP 71111.11.

b. Findings

No 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):

- RCIC System.

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:

- Emergent maintenance on November 10th to address dewatering Main Power Transformer Electric Cable Vault 1APB, and
- Planned maintenance during the week of December 14th through 19th on the Motor Driven Feedwater Pump Maintenance and Emergency Reserve Auxiliary Transformer.

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 two 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 00970557, "Issue With Auto Start of Division 3 Diesel Following Manual Stop;"
- AR 00955116, "Control Room Ventilation Train 'B' Low Temperature Time Delay Relay Has No Equipment Identification Number;" and
- AR 00988454, "Q Level 4 O-Rings Installed in Safety Related Solid Radioactive Waste Reprocessing System Valves."

The inspectors selected these potential operability 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 determined, where appropriate, compliance with bounding limitations associated with the evaluation.

In addition, the inspectors verified that problems related to the operability 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 three operability evaluation inspection samples as defined in IP 71111.15.

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:

- Planned maintenance to replace and calibrate a Division 4 Nuclear System Protection System Power Supply;
- Planned maintenance for motor replacement, valve repack, and stroke time test on valve 1B21-F302A;
- Planned maintenance for breaker 1AP05EF (Motor Driven Feed Pump 1FW01PC) replacement; and
- Planned maintenance to overhaul actuator and replace accessories on valve 1WS018A.

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

In addition, the inspectors reviewed 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 four post-maintenance testing inspection samples as defined in IP 71111.19.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Unit 1 Forced Outage (C1F51)

a. Inspection Scope

The inspectors evaluated outage activities during Unit 1 forced outage C1F51, which began on September 29, 2009. The licensee performed a plant shutdown required by TS 3.4.5, "RCS Operational Leakage," due to a greater than 2 gallon-per-minute increase in unidentified leakage within the previous 24 hours. After the unit was shut down, the licensee entered the drywell and identified that the leak was from the RCIC inboard steam isolation valve (1E51F0063) stem packing. The licensee restarted the unit on October 3rd.

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

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

b. Findings

No findings of significance were identified.

.2 Unit 1 Forced Outage (C1F52)

a. Inspection Scope

The inspectors evaluated outage activities during Unit 1 forced outage C1F52, which began on October 15, 2009. Unit 1 was manually scrammed from full power following an unexpected trip of the 'B' reactor recirculation pump. Operators manually scrammed the reactor just before reactor vessel water level reached the Level 8 (high level) reactor scram setpoint. After the unit was shut down, the licensee identified that the pump motor had failed due to an internal electrical fault. The licensee restarted the unit on October 24th.

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

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

b. Findings

No findings 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 function and to verify that the testing was conducted in accordance with applicable procedural and TS requirements:

- CPS 0952.01, "LPCS/RHR 'A' Pumps & LPCS/RHR 'A' Water Leg Pump Operability;" (Surveillance Test of the LPCS Pump) (IST)
- CPS 9067.01, "Standby Gas Treatment System Train Flow/Heater Operability;" and

- CPS 9080.01, "Diesel Generator 1A Operability Manual and Quick Start Operability."

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 one in-service test and two routine surveillance tests for a total of three inspection samples as defined in IP 71111.22.

b. Findings

(1) Standby Gas Treatment (SGT) System Flow/Heater Operability Surveillance Test

Introduction

The inspectors identified that the licensee's monthly surveillance test procedure for demonstrating operability of the SGT system may not include appropriate quantitative or qualitative acceptance criteria for determining that the system was capable of performing its specified safety function. This issue is considered to be an Unresolved Item pending additional review by the inspectors to determine whether the surveillance test procedure was adequate to satisfy the surveillance testing requirement.

Discussion

The inspectors reviewed the licensee's performance of surveillance testing that was accomplished in accordance with procedure CPS 9067.01, "Standby Gas Treatment System Flow/Heater Operability," Revision 31a. This surveillance test procedure was performed to satisfy TS Surveillance Requirement (SR) 3.6.4.3.1, which required that each SGT subsystem (or train) be operated for  $\geq 10$  continuous hours with the heaters operating once every 31 days. As described in the UFSAR, the safety function of the SGT system is to minimize the offsite release of radioactive materials that leak from the primary containment into the secondary containment following a design basis accident to limit the offsite and control room dose to the guidelines of 10 CFR 50.67.

According to the Bases for TS SR 3.6.4.3.1: "Operating each SGT subsystem from the main control room for  $\geq 10$  hours ensures that both subsystems are operable and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on (automatic heater cycling to maintain temperature) for  $\geq 10$  continuous hours every 31 days eliminates moisture on the adsorbers and HEPA [high efficiency particulate air] filters."

During review of CPS 9067.01, the inspectors noted that the procedure did not have specific steps to ensure that flow blockage did not exist by verifying that each SGT subsystem provided sufficient air flow. The acceptance criteria specified in Step 9.1.1 of the procedure required only that the “SGT train operates for  $\geq 10$  hours with flow through the train and the heater is operable.” Although SGT subsystem inlet flow was recorded, there were no acceptance criteria in the procedure to evaluate whether each subsystem was capable of providing the minimum required air flow to meet its safety function. According to the UFSAR, the SGT system was designed with a flow control valve that maintains flow at 4000 cubic feet per minute ( $\pm 10\%$ ); however, there was no comparison of the recorded flow rates with the design flow rate to ensure that the fan and/or the flow control valve were operating properly or that there was no flow blockage. Although pre-filter and HEPA filter differential pressures were recorded, the acceptance criteria provided in Step 9.2.1 of CPS 9067.01 only established criteria for dirty filter replacements. The criteria were not used to evaluate whether each subsystem was capable of providing the minimum required air flow to meet its safety function. Although SGT subsystem inlet and outlet temperatures were recorded three times during the 10-hour run, there were no acceptance criteria in the procedure to evaluate whether the heater was capable of providing sufficient heat to eliminate moisture on the adsorbers and HEPA filters. There were also no specific steps in CPS 9067.01 to measure and evaluate fan and motor vibration levels or to locally assess the running subsystem for abnormalities. Local inspection of the subsystem during operation (e.g., checking rotating equipment for abnormal temperatures, odors, noise and/or vibration) would ensure that blockage, fan or motor failure, or excessive vibration could be detected for corrective action.

The inspectors discussed these observations with the licensee and questioned whether simply verifying that the subsystem operates for  $\geq 10$  hours with the heater energized provided an adequate demonstration that each SGT subsystem was capable of performing its specified safety function to satisfy TS SR 3.6.4.3.1. This issue is considered to be an **Unresolved Item (URI 05000461/2009005-02)** pending additional review and resolution of open questions to determine whether the surveillance test procedure was adequate to satisfy the surveillance testing requirement.

### **Cornerstone: Emergency Preparedness**

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

##### .1 Emergency Action Level and Emergency Plan Changes

###### a. Inspection Scope

Since the last NRC inspection of this program area, Emergency Plan Annex, Revisions 12, 13, and 14 were implemented based on the licensee’s determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Emergency Plan changes and a review of the Emergency Action Level (EAL) changes to evaluate for potential decreases in effectiveness of the Plan. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

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

b. Findings

(1) Changes to EAL HU6 Potentially Decrease the Effectiveness of the Plans without Prior NRC Approval

Introduction

The inspectors reviewed changes implemented to the Clinton Station Radiological Emergency Plan Annex EALs and EAL Basis. In Revision 12, the licensee changed the basis of EAL HU6, "Fire not extinguished within 15 minutes of detection within the protected area boundary by adding two statements. The two changes added to the EAL basis stated that if the alarm could not be verified by redundant control room or nearby fire panel indications, notification from the field that a fire exists starts the 15-minute classification and fire extinguishment clocks. The second change stated the 15-minute period to extinguish the fire does not start until either the fire alarm is verified to be valid by additional control room or nearby fire panel instrumentation, or upon notification of a fire from the field. These statements conflict with the previous Clinton Station Annex, Revision 11, basis statements and potentially decrease the effectiveness of the Plans.

Description

Clinton Station Radiological Emergency Plan Annex, Revision 11, EAL HU6 initiating condition stated, "Fire not extinguished within 15 minutes of detection, or explosion, within the protected area boundary." The threshold values for HU6 were, in part: 1) Fire in any Table H2 area not extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm, or 2) Fire outside any Table H2 area with the potential to damage safety systems in any Table H2 area not extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm. Table H2, Vital Areas, were identified as containment, auxiliary building, fuel building, control building (excluding chemistry lab), diesel generator and HVAC building, and greenhouse. The basis defined fire as "combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed."

The basis for Revision 11, EAL HU6 thresholds 1 and 2 stated, in part, the purpose of this threshold is to address the magnitude and extent of fires that may be potentially significant precursors to damage to safety systems. As used here, notification is visual observation and report by plant personnel or sensor alarm indication. The 15-minute period begins with a credible notification that a fire is occurring or indication of a valid fire detection system alarm. A verified alarm is assumed to be an indication of a fire unless personnel dispatched to the scene disprove the alarm within the 15-minute period. The report, however, shall not be required to verify the alarm. The intent of the 15-minute period is to size the fire and discriminate against small fires that are readily extinguished (e.g., smoldering waste paper basket, etc.).

Revision 12 of the Clinton Station Radiological Emergency Plan Annex, changed the threshold basis for EAL HU6 by adding the following two statements: 1) "If the alarm

cannot be verified by redundant control room or nearby fire panel indications, notification from the field that a fire exists starts the 15-minute classification and fire extinguishment clocks," and 2) "The 15-minute period to extinguish the fire does not start until either the fire alarm is verified to be valid by utilization of additional control room or nearby fire panel instrumentation, or upon notification of a fire from the field."

The two statements added to the basis in Revision 12 conflict with the Revision 11 threshold basis and initiating condition. The changed threshold basis in Revision 12 could add an indeterminate amount of time to declaring an actual emergency until a person responded to the area of the fire and made a notification to the control room of a fire in the event that redundant control room or nearby fire panel indications were not available.

Pending further review and verification by the NRC to determine if the changes to EAL HU6 threshold basis potentially decreased the effectiveness of the Plans, this issue was considered an **Unresolved Item (URI 05000461/2009005-05)**.

#### 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 Third Quarter 2009 Performance Indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter (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 Reactor Coolant System Leakage

###### a. Inspection Scope

The inspectors verified the RCS Leakage Performance Indicator for Unit 1. The inspectors reviewed the licensee's RCS leakage tracking surveillance test data from October 1, 2008, through September 30, 2009, to validate the accuracy of the licensee's submittals. 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 and none were identified.

This inspection constituted one RCS Leakage 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.

b. Findings

No findings of significance were identified.

.2 Annual In-Depth Review Samples

a. Inspection Scope

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

- AR 00972235, "Valve Packing Failure Inside Drywell Resulted in Plant Shutdown Due to Increasing Unidentified Leakage Rate"
- AR 00970974, "Non-conservative Change to Auxiliary Building Temperature Trip Setpoint," and EC 377070, "Raise Temperature Switch Isolation Setpoints for Auxiliary Building Steam Tunnel"

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 Correctly Torque Valve Packing Gland Nuts Resulted in Valve Packing Failure and Unplanned Plant Shutdown

Introduction

A finding of very low safety significance (Green) with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 29, 2009, when a steam leak developed from the RCIC system inboard steam isolation valve (1E51F0063) stem packing. This resulted in a plant shutdown due to a greater than 2 gallon-per-minute increase in unidentified RCS leakage within the previous 24 hours. Subsequent licensee investigation revealed that maintenance craftsmen had failed to correctly tighten the valve packing gland nuts to the as-left torque value from original packing installation when performing scheduled maintenance to verify the as-found torque value in 2006.

Description

On September 29, 2009, the licensee initiated a plant shutdown required by TS 3.4.5, "RCS Operational Leakage," due to a greater than 2 gallon-per-minute increase in unidentified leakage within the previous 24 hours. After the unit was shut down, the licensee entered the drywell and identified that the leak was from the RCIC system inboard steam isolation valve (1E51F0063) stem packing. Refer to Section 4OA3.2 of this inspection report for a review and closure of the Licensee Event Report (LER) associated with the unit shutdown.

The failed packing set was installed in February 2004 as part of a modification that replaced the bonnet to eliminate the leak-off line. The valve was originally designed with a packing leak-off line located between two sets of packing to allow identification of leakage when the first set of packing begins to leak. The currently installed packing set is a standard Chesterton 5-ring set with a live-load assembly. When it was installed with the modification, the packing was consolidated and the packing gland nuts were tightened to 35 foot-pounds.

The licensee performed Work Order 801164-01 to verify the valve's packing gland nut torque during the February 2006 refueling outage based on a recommendation and operating experience from another Exelon site to confirm the packing torque remained within tolerance after one operating cycle. Step 1 of the work order instructions stated, in part: "Validate packing gland nut torque for valve 1E51F063 in accordance with the values as delineated on the applicable Chesterton Journeyman Worksheet." The required torque range on the Journeyman Worksheet was 32 to 39 foot-pounds. The as-found torque was 29 foot-pounds and the as-left torque was 30 foot-pounds. There were no comments documented in the work order to explain why the as-left torque was less than the minimum torque value on the Journeyman Worksheet, consistent with the explanatory note preceding Step 1 of the work order.

The inspectors thoroughly examined the licensee's root cause evaluation for the 1E51F0063 stem packing failure and concluded that the licensee had not neglected any likely factors. There were three causal factors identified by the licensee:

1. The 1E51F063 valve stem was off-center with the stuffing box, with the potential to cause packing side loading and accelerated loss of packing load. (root cause)

During corrective maintenance to repack the valve during the forced outage, maintenance craftsmen performed measurements and identified that the valve stem was off-center to the stuffing box. According to the licensee's evaluation of the condition, stroking a valve with the stem off-center will side load the packing set. Side loading causes uneven stresses in the packing and can contribute to accelerated packing failure. Although the valve was repacked and satisfactorily passed post-maintenance testing, the stem off-center condition was not corrected and still remains.

2. Inadequate work instructions did not require the packing gland nuts for 1E51F063 to be tightened to the as-left value from the original installation. (root cause)

The licensee's root cause team reviewed the original installation work order from February 2004 and found that the valve was packed in accordance with the work instructions and the packing manufacturer's recommendations. The licensee's evaluation concluded that the work instructions for the torque verification in February 2006 did not provide an appropriate torque value for maintenance craftsmen to tighten the packing gland nuts because it did not specify tightening the nuts to the as-left value from the original installation. Although the maintenance craftsmen did not exceed the torque value on the Journeyman Worksheet (i.e., 39 foot-pounds), the as-left torque of 30 foot-pounds was less than the as-left value from the original installation (i.e., 35 foot-pounds) and also less than the minimum value (i.e., 32 foot-pounds) called for on the Journeyman Worksheet.

3. Clinton Power Station does not have a valve packing program that keeps current with industry technology. (contributing cause)

The licensee's valve packing process has, for the most part, remained unchanged since it was first developed in the early 1990s. Research and testing throughout the industries using valves in similar high pressure/temperature applications have found additional packing options to assure valve packing integrity while allowing the valves to stoke open and closed smoothly; however, the licensee did not keep current with the changes.

As a corrective action to prevent recurrence, the licensee replaced the 1E51F0063 valve stem packing during the forced outage and the gland nuts were tightened to the correct torque value. An additional corrective action to prevent recurrence was identified to determine the cause for the valve stem being off-center with the stuffing box and to correct the condition. The licensee scheduled this action to be completed during the next refueling outage. To address the contributing cause involving the licensee's valve packing program, the licensee identified a corrective action to update its valve packing program to current industry practices, including an increase in gland stress to provide margin and pre-approved alternate packing arrangements. To address the potential extent of condition with other valves that were modified in February 2004, the licensee identified an action to verify the packing gland nut torque values and tighten them to the as-left values from original installation during the next refueling outage.

Consistent with the licensee's root cause determination, the inspectors concluded that Work Order 00801164-01 was inadequate to correctly tighten the valve packing gland nuts to the as-left value from original packing installation when performing scheduled maintenance to verify the as-found torque value.

### Analysis

The inspectors determined that the licensee's failure to correctly tighten the RCIC system inboard steam isolation valve stem packing gland nuts to the as-left torque value from original packing installation when performing scheduled maintenance to verify the as-found torque value was a performance deficiency warranting a significance evaluation. The inspectors assessed this finding using the SDP. 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, "Power Reactor Inspection Reports, Appendix B, "Issue Screening," the inspectors determined that the finding was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to correctly tighten the valve stem packing gland nuts resulted in stem packing failure and a subsequent plant shutdown due to exceeding the TS limit for an increase in unidentified RCS leakage.

### Phase 1 SDP Review

The inspectors performed a Phase 1 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 would require a Phase 2 SDP review because the finding resulted in exceeding the TS limit for RCS leakage.

### Phase 2 SDP Review

The inspectors reviewed this finding with the Regional Senior Reactor Analyst to determine how to appropriately utilize the Phase 2 SDP assessment guidance provided in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Based on this review, the finding was determined to be of very low safety significance (Green) because there was no loss of mitigation capability for any safety system and therefore no resultant change in core damage frequency. While the worst case degradation of a complete packing failure occurred during this event, the increase in RCS leakage was manageable and the safety function of the RCIC pump was maintained until the plant was shut down and cooled down.

### Cross-Cutting Aspects

The inspectors concluded that because the performance issue was associated with maintenance performed in February 2006, it did not necessarily reflect current licensee performance and no cross-cutting aspect was identified.

## Enforcement

10 CFR 50, Appendix B, Criteria 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 and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above:

(a) On or about February 5, 2006, the licensee failed to implement the requirements of Work Order 00801164-01 when performing preventive maintenance on RCIC system inboard steam isolation valve 1E51F0063, an activity affecting quality. Specifically, maintenance craftsmen failed to correctly validate the packing gland nut torque values as delineated on the applicable Chesterton Journeyman Worksheet as required by Step 1 of the work order. Craftsmen failed to tighten the packing gland nuts to at least the minimum torque value on the Chesterton Journeyman Worksheet, consistent with the explanatory note preceding Step 1 of the work order.

(b) Work Order 00801164-01 used to perform maintenance on RCIC system inboard steam isolation valve 1E51F0063 was not appropriate to the circumstances. Specifically, the work order did not provide instructions to correctly tighten the valve packing gland nuts to the as-left value from the original packing installation.

Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (**NCV 05000461/2009005-03**). The licensee entered this violation into its corrective action program as AR 00972235.

### .3 Semi-Annual Trend Review

#### a. Inspection Scope

The inspectors reviewed repetitive or closely related issues documented in the licensee's corrective action program to look for trends not previously identified. The inspectors also reviewed action requests regarding licensee-identified potential trends to verify that corrective actions were effective in addressing the trends and implemented in a timely manner commensurate with the significance.

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

#### b. Assessment and Observations

##### (1) Overall Effectiveness of Trending Program

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

adverse trends that were not already identified by the licensee and entered into its corrective action program.

(2) Adverse Trend in Evaluating Operability or Past Operability/Reportability

During the past year, the inspectors identified an adverse trend in the licensee's evaluation of operability or past operability/reportability when degraded/non-conforming conditions were found. Specific inspector identified examples of operability or past operability/reportability related findings that were documented in inspection reports during the past year included: (1) the Division 1 shutdown service water cross-tie with plant service water valve failure issue (NRC Inspection Report 05000461/2008004), (2) the Division 2 RHR system pump seal cooler flow test failure issue (NRC Inspection Report 05000461/2008004), (3) a spent fuel pool cooling system flow control valve's failure impact on the suppression pool makeup system's safety function issue (NRC Inspection Report 05000461/2009003), and (4) the control room ventilation system pressure issue (NRC Inspection Report 05000461/2009004). Additional examples of incomplete or inadequate operability or past operability/reportability evaluations have been identified by the inspectors, but were not documented because the issues were determined to be of minor safety significance. These examples included issues involving operability or past operability/reportability evaluations for an electrical containment penetration that was discovered with 6 of 12 bolts missing (ARs 00814191, 00877517 and 00890200); missed inservice testing requirements for excess flow check valves (ARs 00846540 and 00943162); and, failed stroke time testing on control room ventilation system chilled water valve 0VC022A (AR 00878834).

It is noteworthy that the licensee's Nuclear Oversight Department has also identified additional examples of problems with operability evaluations performed at the station and documented those problems in multiple action requests. These issues included incomplete aggregate impact reviews, incomplete corrective actions, and incomplete documentation of the technical basis supporting operability of degraded/non-conforming conditions.

In response to what the licensee has characterized as an adverse trend with operability evaluation technical rigor, the Engineering Director drafted an action plan in early October that implemented several corrective actions. These actions included: (1) participation of system engineering, operations, and licensing staff in all future operability evaluations to ensure that the completed evaluations are sufficiently comprehensive; (2) review of completed evaluations by the station's Management Review Committee to ensure site-wide alignment of operability decisions as well as ensure support for corrective actions and compensatory measures; (3) benchmarking with other Exelon stations to identify best practices for ensuring high quality operability evaluations; and, (4) training for the engineering, operations, and licensing staff who perform or review operability evaluations.

In addition, the licensee completed a common cause evaluation to review the underlying causes for the adverse trend. The common cause evaluation concluded that operability evaluation quality had been challenged as a result of inadequate understanding of the plant's design basis by individuals preparing and reviewing operability evaluations and the subsequent failure to document complete technical justification supporting operability. The lack of detail resulted in requests for additional information to assure operability evaluation conclusions were correct and this contributed to missed

opportunities with respect to identification of corrective actions. The common cause was determined to be a failure to reinforce the appropriate quality standards for operability evaluations. The licensee found that the level of quality was inadequate, in that many of the operability evaluations lacked appropriate supporting technical justification and licensing basis information. The common cause evaluation went on to say that the condition was symptomatic with engineering products typically brought on by perceived time pressure and/or unclear standards or expectations. At the end of the inspection period, the licensee planned to complete an apparent cause evaluation to further investigate the apparent latent organizational weaknesses.

Because the inspectors have already documented several findings involving inadequate operability or past operability/reportability evaluations, a separate finding for the identification of this adverse trend is not documented in this inspection report.

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

##### .1 Unit 1 Reactor Scram Response

###### a. Inspection Scope

On October 15, 2009, Unit 1 was manually scrammed from full power following an unexpected trip of the 'B' reactor recirculation pump. Operators manually scrammed the reactor just before reactor vessel water level reached the Level 8 (high level) reactor scram setpoint. The inspectors responded to the Control Room to verify that post-scram plant parameters were as expected. The inspectors also reviewed plant procedures, equipment configurations, and Control Room logs. The inspectors verified that operator response was in accordance with plant procedures and that safety-related plant equipment responded as designed.

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

###### b. Findings

No findings of significance were identified.

##### .2 (Closed) LER 05000461/2009-004-00, "Steam Leak Due to Valve Packing Torque Results in Required Unit Shutdown"

On September 29, 2009, the licensee initiated a plant shutdown required by TS 3.4.5, "RCS Operational Leakage," due to a greater than 2 gallon-per-minute increase in unidentified leakage within the previous 24 hours. After the unit was shut down, the licensee entered the drywell and identified that the leak was from the RCIC system inboard steam isolation valve (1E51F0063) stem packing. The licensee reported this event as the completion of a plant shutdown required by the TS in accordance with 10 CFR 50.73(a)(2)(i)(A). The performance issues related to this event are discussed in Section 4OA2.2 of this inspection report. The inspectors concluded that the licensee's failure to correctly tighten the valve packing gland nuts to the as-left torque value from original packing installation when performing scheduled maintenance to verify the as-found torque value was a finding of very low safety significance. LER 05000461/2009-004-00 is closed.

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

.3 (Closed) LER 05000451/2009-003-00, "Safety Function Loss Due to No Like-for-Like Verification of Swapped Relays"

a. Inspection Scope

On September 23, 2009, it was discovered that two relays had been incorrectly installed on the Division 3 diesel generator (DG). This resulted in the loss of safety function of the DG and high pressure core spray system for approximately two years. The licensee reported this event as a condition that could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident in accordance with 10 CFR 50.73(a)(2)(v)(D). The inspectors interviewed plant personnel and reviewed the licensee's apparent cause evaluation and corrective actions for the event.

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

b. Findings

(1) Failure to Correctly Install Relays Inside of the Division 3 Diesel Generator Control Panel

Introduction

A finding of very low safety significance (Green) with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 23, 2009, when it was discovered that two time delay relays had been incorrectly installed inside the Division 3 DG Control Panel. This resulted in the loss of safety function of the DG, which supports the high pressure core spray system function, for approximately two years.

Discussion

From September 24, 2007, through September 23, 2009, the Division 3 DG was incapable of performing its safety function following a certain set of circumstances. This period of inoperability was due to the incorrect installation of electrical relays K-8A and K-32, which had been installed in swapped locations inside the Division 3 DG Control Panel.

During performance of preventative maintenance to calibrate the relays it became readily apparent that the wrong components had been installed because when electrical maintenance technicians attempted to calibrate the first relay, they found that the relay did not have the correct time delay range. The K-8A relay should have a range of 20-200 seconds, however the licensee had put a 1.5-15 second time delay relay designed for use as a K-32 relay, in its location, and vice versa. This resulted in two specific problems. With the K-32 relay in the K-8A position, it would have prevented an auto restart of the DG for approximately 45 seconds after DG shutdown (50 seconds for the K-8A shutdown timer minus 5 seconds for the K-32 being in the K-8A position). The DG would not have started in a 45 second time window if a Loss of Offsite Power (LOOP) or Loss of Coolant Accident (LOCA) had occurred following DG shutdown until

after the K-8A relay had timed out. Secondly, with the K-8A relay in the K-32 position, the generator field flashed during start signals for 80 seconds rather than 5 seconds. This condition resulted in damaging a current limiting resistor in the circuit and a portion of the associated wiring. The damaged resistor was checked, however, and found to be functional. The resistor and wiring were repaired and tested satisfactorily.

Equipment history documented that these two relays had been calibrated and replaced in September 2007. Calibration data sheets had both relay model numbers documented, but only one of the two part serial numbers. Following completion of calibration at that time, the relays were tagged for identification and stored in the safety-related parts locker. It is unknown whether the identification tags placed on the relays correctly identified the relays prior to installation. The relay swap activities were performed by two electrical maintenance technicians, both qualified to perform the work. Neither of the two individuals recalled the exact method of like-for-like verification that was performed during the swap out activity. Work orders indicate that model numbers for the two new relays were recorded and did not match the model numbers of the removed relays. This discrepancy was not recognized by the technicians or by subsequent supervisory reviews. Post-maintenance testing was completed following the relay replacements, but the testing did not identify that the relays had been swapped.

The inspectors thoroughly examined the licensee's apparent cause evaluation and concluded that the licensee had not neglected any significant issues. In addition, the corrective actions taken by the licensee in response to the documented causes also appeared to be appropriate and commensurate with the performance of like-for-like replacement of safety-related components.

### Analysis

The inspectors determined that the licensee's failure to correctly install Division 3 DG time delay relays K-8A and K-32 in accordance with the licensee's prescribed procedures was a performance deficiency warranting a significance evaluation. The inspectors assessed this finding using the SDP. The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that Example 5c was related to this issue in that nonconforming parts were installed and the DG was returned to service. In addition, consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the licensee's failure to correctly install relays or other components in plant systems, if left uncorrected, would potentially lead to a more significant safety concern (i.e., the inoperability of risk-significant plant safety systems). The inspectors concluded therefore that this finding was of more than minor safety significance.

### Phase 1 SDP Assessment

The inspectors performed a Phase 1 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 would require a Phase 2 SDP review because it resulted in an event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.



## Phase 2 SDP Assessment

The inspectors performed a Phase 2 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Using the most current version of the site specific Pre-Solved Worksheet in the Risk-Informed Inspection Notebook for Clinton Power Station, the inspectors concluded that since the incorrect relays were installed from September 23, 2007, through September 24, 2009, an exposure time of greater than 30 days should be used. By changing the condition of the high pressure core spray system (which is solely supplied by the Division 3 DG) to inoperable for this exposure time, the inspectors determined that the finding was potentially of high safety significance (Red). The inspectors reviewed this finding with the Regional Senior Reactor Analyst to determine how to appropriately utilize the Phase 2 SDP assessment guidance. Based on this review, the finding was determined to be of very low safety significance (Green) considering the very limited conditions (i.e., only for 45 seconds following shutdown of the engine concurrent with a LOOP/LOCA event) when the Division 3 DG was incapable of performing its safety function. The resultant exposure time was therefore estimated to be about 27 minutes during the 2-year period.

### Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, licensee personnel work practices did not support effective work performance. The licensee did not effectively communicate expectations regarding procedural compliance and, as a result, maintenance technicians did not follow their procedures by installing nonconforming components and restoring the safety system to service. (IMC 0305 H.4(b))

### Enforcement

10 CFR 50, Appendix B, Criteria 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 and shall be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, on September 24, 2007, the licensee failed to implement the requirements of maintenance procedures MA-AA-1000, "Conduct of Maintenance," Revision 12, and MA-AA-716-011, "Work Execution and Closeout," Revision 12. Specifically, electrical maintenance technicians failed to compare replacement parts to the old parts and verify them to be like-for-like prior to installation as required by Section 3.0, Step 13 of MA-AA-1000. In addition, electrical maintenance technicians failed to ensure that parts were like-for-like or evaluated for use prior to replacement and to notify the First Line Supervisor (or designee) of any discrepancies as required by Section 4.3, Step 4.3.1 of MA-AA-716-011. As a result, relays K-8A and K-32 were incorrectly installed inside the Division 3 DG Control Panel, which rendered the DG inoperable.

Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (**NCV 05000461/2009005-04**). The licensee entered this violation into its corrective action program as AR 00969157. LER 05000461/2009-003-00 is closed.

#### 4OA5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

###### b. Findings

No findings of significance were identified.

#### 4OA6 Management Meetings

##### .1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. F. Kearney and other members of the licensee's staff at the conclusion of the inspection on January 7, 2010. 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 results of the Licensed Operator Requalification Training Program inspection with the Mr. S. Gackstetter and other members of the licensee's staff on November 20, 2009. The inspectors confirmed that none of the potential report input discussed was considered proprietary.
- Biennial Operator Requalification Examination Results via telephone with Ms. K. Baker on December 15, 2009.
- The annual review of Emergency Action Level and Emergency Plan changes with the licensee's Regulatory Affairs Manager, Mr. D. Kemper, via telephone on December 21, 2009. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

K. Baker, Operations Training Manager  
R. Bedford, Licensed Operator Requalification Training Lead (Acting)  
B. Bunte, Design Engineering Manager  
T. Chalmers, Operations Director  
J. Domitrovich, Maintenance Director  
R. Frantz, Regulatory Assurance  
S. Gackstetter, Training Director  
M. Heger, Mechanical/Structural Design Engineering Manager  
N. Hightower, Radiological Engineering Manager  
D. Kemper, Regulatory Affairs Manager  
K. Leffel, Operations Support Manager  
M. Kanavos, Plant Manager  
F. Kearney, Site Vice President  
S. Kowalski, Engineering Response Manager  
J. Peterson, Regulatory Assurance  
M. Reandeau, Shift Operations Superintendent  
J. Stovall, Radiation Protection Manager  
J. Ufert, Fire Marshall  
C. VanDenburgh, Nuclear Oversight Manager  
G. Vaught, Examination Author  
R. Weber, Engineering Director  
C. Williamson, Security Manager

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000461/2009005-01	URI	Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program (Section 1R05.b.1)
05000461/2009005-02	URI	Standby Gas Treatment System Flow/Heater Operability Surveillance Test (Section 1R22.b.1)
05000461/2009005-03	NCV	Failure to Correctly Torque Valve Packing Gland Nuts Resulted in Valve Packing Failure and Unplanned Plant Shutdown (Section 4OA2.2.b.1)
05000461/2009005-04	NCV	Failure to Correctly Install Relays Inside of the Division 3 Diesel Generator Control Panel (Section 4OA3.3.b.1)
05000461/2009005-05	URI	Changes to EAL HU6 Potentially Decrease the Effectiveness of the Plans without Prior NRC Approval (Section 1EP4.b.1)

### Closed

05000461/2009005-03	NCV	Failure to Correctly Torque Valve Packing Gland Nuts Resulted in Valve Packing Failure and Unplanned Plant Shutdown (Section 4OA2.2.b.1)
05000461/2009-004-00	LER	Steam Leak Due to Valve Packing Torque Results in Required Unit Shutdown (Section 4OA3.2)
05000461/2009005-04	NCV	Failure to Correctly Install Relays Inside of the Division 3 Diesel Generator Control Panel (Section 4OA3.3.b.1)
05000461/2009003-00	LER	Safety Function Loss Due to No Like-for-Like Verification of Swapped Relays (Section 4OA3.3.b.1)

### Discussed

05000461/2008004-03	NCV	Failure to Perform Adequate Preventive Maintenance on Shutdown Service Water Valve 1SX014A Resulted in Significant Degradation and Gross Seat Leakage (Section 4OA2.3)
05000461/2008004-04	FIN	Failure to Recognize the Safety-Related System Function of the 1B Residual Heat Removal Pump Seal Cooler When Evaluating Past Operability of the Pump (Section 4OA2.3)
05000461/2009003-01	FIN	Failure to Evaluate Safety Function of Suppression Pool Makeup System (Section 4OA2.3)
05000461/2009004-03	NCV	Failure to Update the Final Safety Analysis Report (Section 4OA2.3)

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection (71111.01)

- CPS 1860.01, "Cold Weather Operation," Revision 7
- CPS 1860.01C001, "Operations Department Cold Weather Preparations Checklist," Revision 6
- CPS 1860.01C003, "Cold Weather Heater and Heat Trace Operability Checklist," Revision 1
- CPS 3103.01V002, "Feedwater Instrumentation Valve Lineup," Revision 9
- WC-AA-107, "Seasonal Readiness," Revision 6
- WC-AA-107, "Seasonal Readiness Attachment 3," Revision 5 (all evaluated systems)
- AR 00893336, "1FW004 Valve PMS Need Revision"
- NRC Information Notice, "96-36: Degradation of Cooling Water Systems Due to Icing," June 12, 1996
- NRC Information Notice, "98-02: Nuclear Power Plant Cold Weather Problems and Protective Measures," January 21, 1998
- AR 00593903, "Loss of 12 kV Procedure Enhancement"
- AR 00830314, "Site Winter Readiness Actions"
- AR 00845249, "NOS ID Enhancement; Discrepancy in CPS 1860.01 Cold Weather"
- AR 00957870, "2FP015 Has Small Seat Leak Following Repairs"
- AR 00981150, "Winter Readiness Work-Down Curve Affected By C1F52"
- AR 00986547, "NRC Resident Inspector Request for Information"
- AR 00986665, "Cold Weather Preps Schedule Not Consistent With Procedure"
- AR 00987081, "Screens Running In Slow Due To High D/P On 1PDSSW009"
- AR 00988714, "Heater #2 Will Not Energize"
- Work Order 01029466, "Initiate Cold Weather Restorations IAW 1860.01," March 25, 2008
- Work Order 01083883, "Clean And Check Panel and Megger Heaters," August 25, 2008
- Work Order 01190617, "Initiate Cold Weather Preps IAW 1860.01 Sect. 8.1," September 14, 2009

### 1R04 Equipment Alignment (71111.04)

- CPS 3312.01, "Residual Heat Removal (RHR)," Revision 38a
- CPS 3312.01E001, "Residual Heat Removal Electrical Lineup," Revision 14
- CPS 3312.01V001, "Residual Heat Removal Valve Lineup," Revision 16b
- CPS 3312.01V002, "Residual Heat Removal Instrument Valve Lineup," Revision 9
- CPS 3312.03, "RHR – Shutdown Cooling (SDC) & Fuel Pool Cooling and Assist (FPC&A)," Revision 6
- IS-1075-C, "Inservice Test Schematic Residual Heat Removal Sys (RH)," Sheet 001, Revision D
- CPS 3313.01V001, "Low Pressure Core Spray Valve Lineup," Revision 13a
- CPS 3313.01E001, "Low Pressure Core Spray Electrical Lineup," Revision 11a
- CPS 3313.01, "Low Pressure Core Spray (LPCS)," Revision 16
- OP-AA-108-103, "Locked Equipment Program," Revision 2
- AR 00838472, "Correctness of LPCS System Locked Closed Valves in CLOC"
- AR 00994684, "LPCS Locked Valves in Field Not Same As Drawing"

- M05-1073, "Low Pressure Core Spray (LPCS)(LP) Clinton Power Station Unit 1," Revision AG
- Clinton Power Station Updated Final Safety Analysis Report, Revision 11
- CPS 3203.01, "Component Cooling Water (CC)," Revision 32c
- CPS 3203.01V001, "Component Cooling Water Valve Lineup," Revision 18e
- CPS 3203.01V002, "Component Cooling Water Instrument Valve Lineup," Revision 11a
- CPS 3203.01E001, "Component Cooling Water Electrical Lineup," Revision 17a
- M05-1032, "Component Cooling Water (CC)," Sheet 1, Revision AG
- M05-1032, "Component Cooling Water (CC)," Sheet 2, Revision R
- M05-1032, "Component Cooling Water (CC)," Sheet 3, Revision Z

#### 1R05 Fire Protection (71111.05)

- Clinton Power Station Updated Final Safety Analysis Report, Appendix E, "Fire Protection Evaluation Report – Clinton Power Station Unit 1," Revision 11
- Clinton Power Station Updated Final Safety Analysis Report, Appendix F, "Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1," Revision 11
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 9
- AR 00972704, "Combustible Liquids Found in Transient Combustible Free Zone by NRC Resident Inspector"
- AR 00901580, "Fire Protection Concerns Raised by NRC Senior Resident"
- CPS 1893.04M400, "712' Fuel: Basement Prefire Plan," Revision 4
- CPS 1893.04M410, "737' Fuel: Grade Level Prefire Plan," Revision 3
- CPS 1893.04M420, "755' Fuel: Fuel Handling Floor Prefire Plan," Revision 3
- Clinton Power Station Updated Final Safety Analysis Report, Appendix F Figure 1.8-1, "Method 1 Safe Shutdown Cooling Path," Revision 13
- CPS 3822.16, "Safe Shutdown Pathway Emergency Lighting Functional Test," Revision 9d
- CPS 3822.16C001, "Safe Shutdown Pathway Emergency Lighting Functional Test Checklist," Revision 12b
- CPS 3822.17C006, "Safe Shutdown Pathway Emergency Light Checklist," Revision 2a
- CPS 4003.01, "Remote Shutdown (RS)," Revision 14b
- IP-M-0532, "Clinton Power Station Appendix R Safe Shutdown Emergency Lighting Design Criteria," Revision 0

#### 1R06 Flooding Protection Measures (71111.06)

- NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," Revision 0
- NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables," March 21, 2002
- Letter from D. Benyak, (Exelon Generation Company, LLC), to U.S. NRC, Subject: Response to NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," May 7, 2007
- Letter from P. Cowan, (Exelon Generation Company, LLC), to U.S. NRC, Subject: Exelon Generation Company, LLC/AmerGen Energy Company, LLC Response to the Request for Additional Information (RAI) Regarding Resolution of NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," December 7, 2007
- Clinton Power Station Updated Final Safety Analysis Report, Revision 12
- ER-AA-3003, "Cable Condition Monitoring Program," Revision 0
- AR 00736312, "NCV 2007008-01 Continuous Submerged Cables Design Deficiency"
- AR 00891453, "Electrical Duct Manhole Overflows Following Heavy Rainfall"

- AR 00992326, "Rusty Cable Support in Division II Safety Related Manhole 0SHC-B"
- AR 00991804, "Submerged Cable Project Off Track"
- AR 00985800, "Sink Hole Forming North of Radwaste Building"

1R11 Licensed Operator Requalification Program (71111.11)

- LS-AA-126-1001, "FASA Self-Assessment Report, LORT Pre-NRC 71111.11 Inspection (Including Addendum)," 11/04/09
- LS-AA-126-1001, "FASA Self-Assessment Report, INPO Weaknesses and Training Warning Flags," 9/24/2008
- LS-AA-126-1001, "FASA Self-Assessment Report, ACAD Compliance in Operations Training," 11/10/2008
- LS-AA-126-1001, "FASA Self-Assessment Report, OJT/Task Performance Evaluation," 2/10/09
- LS-AA-126-1005, "Check-In Self-Assessment Report, INPO SIF/TIF & 2008 Weaknesses," 8/28/2008
- LS-AA-126-1005, "Check-In Self-Assessment Report Template, Instructor (including Simulator) Effectiveness, Training and Qualification," 6/30/09
- LS-AA-126-1001, "FASA Self-Assessment Report, B.5.b Implementation Readiness," 3/19/2008
- LS-AA-126-1001, "FASA Self-Assessment Report, Zero by Ten Clinton," 7/17/08
- LS-AA-126-1005, "Check-In Self-Assessment Report, Operations Burden Aggregate Process," 10/30/09
- LS-AA-126-1005, "Check-In Self-Assessment Report, Reactivity Management," 11/17/08
- OP-AA-105-101, "Administrative Process for NRC License and Medical Requirements," Revision 11
- OP-AA-105-102, "NRC Active License Maintenance," Revision 9
- HR-AA-07-101, "NRC Licensed Operator Medical Examination," Revision 8
- OP-AA-105-101, "NRC License Maintenance Tracking Sheet (Several Operators)," Various dates
- TQ-AA-150, "Operator Continuing Training – Evaluation Failure Checklist (Multiple)," Various Dates
- TQ-CL-210-4101, "Remedial Training Notification and Action on Failure (Multiple Examples)," Various Dates
- TQ-AA-224-F100, "Remedial Training Notification and Action on Failure (Multiple Examples)," Various Dates
- TQ-AA-224-F090, "Performance Review Committee Data Sheet," 10/15/08
- TQ-AA-224-F020, "Course Attendance Sheet (Multiple Courses)," Various Dates
- TQ-AA-210-5101, "Training Observation Form (Multiple Forms)," Various Dates
- 2008/2009 LORT/STA Curriculum Review Committee Minutes (Multiple); Various Dates
- TQ-AA-224-F070, "Evaluation Summary (Multiple LORT Cycles), Various Dates,"
- LORT Written Requalification Examinations (Several exams reviewed), Various Dates
- LORT Dynamic Simulator Examinations (Several scenarios reviewed), Various Dates
- LORT Job Performance Measures Examinations (Several JPMs reviewed), Various Dates
- N –CL-OPS-700004, "Nuclear System Protection System," Revision 2
- N –CL-OPS-290003, "Control Room HVAC System (VC), Revision 0
- N –CL-OPS-241001, "Steam Bypass and Pressure Control System," Revision 0
- DBIG-SOER-1, "DBIG-SOER 97-1, 98-1, 98-2, 99-1, 02-1, 02-3, 02-4, 03-1, and SER 2-05," Revision 1
- DBIG-SOER-2, "Current SOER Topics," Revision 2

- DBSOER 96-1, "SOER 96-1, Control Room Supervision, Operational Decision-Making, and Teamwork," Revision 1
- N-CL-OPS-DBSOER-09-1, "SOER 09-1, Shutdown Safety," Revision 0
- N-CL-LOR-DB-EC-2007GEN, "AVR and Exciter Modifications," Revision 2
- N-CL-LOR-DB-EC-2007RAT, "RAT and RAT SVC Modifications," Revision 0
- Simulator Exercise Guides
- N-CL-LOR-SE-JIT-23, "Simulator Thermal Hydraulic Model Changes," Revision 0
- SE-JIT-24, "2007 Thermal Hydraulic Model Simulator Instructor Training," Revision 0
- SPVG 1.01a, "Principle Mass and Energy Balance (50%)," May 16, 2008
- SPVG 1.01b, "Principle Mass and Energy Balance (75%)," 5/15/2008
- SPVG 1.01c, "Principle Mass and Energy Balance (100%)," 2/11/2008
- SPVG 1.02, "Simulator Stability," 2/11/2008
- SPVG 1.03, Steady State Performance – 50% Power
- SPVG 1.04, Steady State Performance – 75% Power
- SPVG 1.05, Steady State Performance – 100% Power
- SPVG 2.04, "Reactor Trip Followed by Recovery to Rated Power; 2/19/2008,"
- SPVG 2.10, "Normal Plant Evolutions," 2/19/2008
- SPVG 3.01C, "Stuck Open SRV," 6/10/2009
- SPVG 3.08, "Loss of Instrument Buses (AC and DC)," 7/21/2008
- SPVG 3.09, "Recirculation Pump(s) Trip," 5/27/2008
- SPVG 3.20B, "Small Steamline Break Outside Containment," 6/1/2009
- SPVG 3.24, "Reactor Protection System Failure (ATWS)," 3/12/2008 (Failure) and 7/12/2008 (Successful Retest)
- TQ-AA-150, "Operator Training Programs," V 4
- TQ-AA-203, "On-The-Job Training and Task Performance Evaluation," Revision 5
- TQ-AA-224, "Exelon Nuclear Training – Implementation Phase," Revision 3
- TQ-AA-306, "Simulator Management," Revision 0
- Medical Files for 12 Randomly Selected Licensed Operators, No dates
- AR 843632, "Annual Operation Exam JPM Administration," 11/11/2008
- AR 896513, "Multiple Exam Questions Require Revision," 3/23/2009
- AR 894543, "Crew Failure During Cycle 09-02 Simulator Evaluation," 3/18/2009
- ANSI/ANS-3.5-1993, "Nuclear Power Plant Simulators for Use in Operator Training and Examination
- AR 995739, "Training: Improvement for Exam Security Procedure," 11/19/2009
- Unit 1 Standing Order, On-line Cycling of Inboard PCIVs," 10/27/2009

#### 1R12 Maintenance Effectiveness (71111.12)

- ER-AA-310-1001, "Maintenance Rule – Scoping," Revision 3
- Maintenance Rule Scoping Document, "Reactor Core Isolation Cooling System," November 2, 2009
- Maintenance Rule Reliability Data for Area Radiation Monitoring and Process Radiation Monitoring Systems, November 2, 2009
- Root Cause Investigation 916815-09, "RCIC Tripped During Startup," July 2, 2009
- AR 00989077, "1E51-F031 Didn't Indicate Properly When Stroked Closed"
- AR 00964550, "1E51F077 Post Job Critique"
- AR 00927914, "Station Personnel Are Not Identifying Inadequate Procedure Guidance"
- AR 00916734, "RCIC Outage Duration Adversely Impacted"
- AR 00989329, "NRC Observations on RCR 916815 RCIC Trip and 8223.05 Revision"
- AR 00918144, "Week 0919 RCIC System Outage Window Did Not Meet Unavailability Goal"



- AR 00917169, "Learning Opportunities During Troubleshooting RCIC Turbine"
- CPS 8223.05, "RCIC Steam Supply Turbine Governing Valve and Linkage Maintenance (1E51F610)," Revision 0d

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

- ER-AA-600, "Risk Management," Revision 5
- ER-AA-600-1012, "Risk Management Documentation," Revision 8
- WC-AA-101, "On-Line Work Control Process," Revision 16
- WC-AA-104, "Integrated Risk Management," Revision 15
- Clinton News Flash Article, "138KV/12KV Outage & Emergency Reserve Auxiliary Transformer (ERAT) Temporary Modification Installation," December 14, 2009
- AR 00991384, "Tritium At Main Power Transformer Electric Vault Drain 1APB Above Background"
- AR 00954857, "Potential Buried Line Leak Identified at NW Corner of Turbine Building"
- Work Order 01260824, "Potential Buried Line Leak Identified at NW Corner of Turbine Building," August 19, 2009
- Prompt Investigation Potential Buried Line Leak Identified at NW Corner of Turbine Building IR 954857
- LS-MW-1320, "Reportability Manual Reportable Event RAD 3.1," Revision 3

#### 1R15 Operability Evaluations (71111.15)

- Clinton Power Station Technical Specifications
- Clinton Power Station Updated Final Safety Analysis Report, Revision 11
- 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
- Operability Evaluation 970557-02, "Issue With Auto Start of DIV 3 Diesel Following Manual Stop," Revision 0
- AR 00970557, "Issue With Auto Start of Div 3 Diesel Following Manual Stop"
- AR 00969157, "1E22S001B-K8A for Div III D.G. Incorrect Installation"
- E02-1HP99, "High Pressure Core Spray System (HP) Div 3 Diesel Generator (1E22-S001A)," Sheet 202, Revision L
- CPS 9080.03, "Diesel Generator 1C Operability – Manual and Quick Start Operability," Revision 29a
- CPS 3506.01P003, "Division 3 Diesel Generator Operations," Revision 2a
- AR 00955116, "'B' VC Train Low Temperature Time Delay Relay Has No Equipment Identification Number, Similar to 'A' VC Train"
- Service Request 00064709, "Calibrate 0KYVC119A Every 2 Years"
- Service Request 00065103, "Replace VC Chiller Relays 17 Y"
- CPS 8801.01, "Instrument Calibration 03PS228," Revision 13
- AR 00988454, "Q Level 4 O-Rings Installed In Safety Related WX Valves"
- Operability Evaluation # 988454-02, "1WX019 – Reactor Water Cleanup Filter/Demineralizer Backwash Transfer Inboard Isolation Valve (Div. 2) and 1WX020 – Reactor Water Cleanup Filter/Demineralizer Backwash Transfer Outboard Isolation Valve (Div. 1)"

### 1R19 Post-Maintenance Testing (71111.19)

- Work Order 00993569, "1WS018A – Overhaul Actuator and Replace Accessories," November 19, 2009
- M10-9056, "Plant Service Water System (WS)," Sheet 6, Revision A
- M05-1056, "Plant Service Water (WS)," Sheet 2, Revision AH
- CPS 3203.01, "Component Cooling Water (CC)," Revision 32c
- CPS 8801.72, "Replacement and Calibration of NSPS Power Supplies," Revision 2
- CPS 8451.06, "Corrective Maintenance for Limitorque SMB-0 Through SMB-4 and SB-0 SB-1 and SB-3 Operators," Revision 9
- CPS 3103.01, "Feedwater," Revision 24H
- Work Order 01277178, "Mechanical Maintenance Repack 1B21F302A: Appears To Have A Packing Leak," October 18, 2009
- Work Order 01065237, "Swap Breaker For 1AP05EF, Reactor Feed Pump 1C 1FW01PC" December 7, 2009
- AR 01007327, "Received 5002-2K and 5012-5A On Jog of MDRFP (1FW01PC)"

### 1R20 Outage Activities (71111.20)

- OP-AA-108-108, "Unit Restart Review," Revision 9
- CPS 3001.01, "Preparation For Startup and Approach to Critical
- CPS 3001.01C002, "Mode 2 Checklist," Revision 16a
- CPS 3021.01, "Drywell Close Out (Long Form)," Revision 13b
- CPS 3312.03, "RHR – Shutdown Cooling (SDC) and Fuel Pool Cooling and Assist (FPC&A)," Revision 6
- CPS 3312.03C001, "Alternate Shutdown Cooling Temperature Monitoring Checklist," Revision 0a
- CPS 9000.06, "Reactor Coolant and Vessel Metal/Pressure/Temperature Limit Logs," Revision 31b
- CPS 9000.06D001, "Heatup/Cooldown, Inservice Leak and Hydrostatic Testing 30 Minute Temperature Log," Revision 30a
- CPS 9000.06D002, "Vessel Head and Shell Flange Temperature log," Revision 30
- CPS 9000.06D003, "Shutdown Cooling Temperature Data Sheet," Revision 30d
- Prompt Investigation 972469, "Drywell Walkdown Identify Leak on 1E51-F063"
- MA-CL-716-100, "Fuel Receipt and Storage at CPS," Revision 6
- NF-AA-411, "Receipt Inspection of Nuclear Fuel and Associated Core Components," Revision 4
- NF-CL-411-1000, "New Fuel Assembly, Bundle, Channel, and Channel Fastener Inspection," Revision 7
- Work Order 01277109, "Ops PMT- Leak Check On Lines 1CC43AB-3" & 1CC42FB-3", October 23, 2009
- Common Cause Analysis #822229, "CCA on Drywell Closeout Housekeeping Inspections"
- AR 00807546, "CCA-Drywell Closeout Inspections"
- AR 00822229, "Perform A CCA On Drywell Closeout Inspection Discrepancies"
- AR 00887797, "Refuel Outage Containment Walkdown Strainer Debris"
- AR 00983791, "LL C1F52 Drywell Close-Out – CPS No. 3021.02"
- AR 00988371, "C1F52 Management Lessons Learned Discussion"
- AR 00988888, "C1F51: NRC Final Walkdown for Drywell Closeout"
- AR 00982655, "Improperly Stored Parts and Tools in Drywell"
- AR 00982645, "FME Issue Cutting Pipe"
- AR 00982087, "Inadequate FME Barriers in the Drywell"

- AR 00982086, "TRG-Contractors Not Receiving FME Training"
- AR 00982078, "Enhancement IR For Suppression Pool Protection"
- AR 00982072, "Shaw Contractor FME Practices-Ironworkers"
- AR 00992194, "Flashlight Observed In Suppression Pool"
- CPS 9811.01, "Shutdown Margin Determination," Revision 29
- CPS 3001.01C001, "Preparation for Startup Checklist," Revision 17c
- OU-AA-103, "Shutdown Safety Management Program," Revision 9
- OU-CL-104, "Shutdown Safety Management Program Clinton Power Station," Revision 3
- CPS 4006.01, "Loss of Shutdown Cooling," Revision 4d
- Operations Technical Decision Maker (AR 00979732), "Reactor Recirculation Loop B Discharge Valve Failure to Close Electrically," October 16, 2009
- CO 00078293 Checklist 004, "Temp Lift, Tag: 1B21F500A, Tag Name: Re-heating Steam Source Valve," October 23, 2009
- AR 00972564, "High Noise Level at Main Steam Shut Off Valves"
- AR 00972529, "1B21F098D: Valve Appears to Have Packing Leak"
- AR 00972464, "Turbine Reset Using Global Bypass"
- AR 00972460, "1C51N011BL: Local Power Range Monitor 14-7A Failed Upscale After Reactor Scram"
- AR 00972431, "1C51K601B: Intermediate Range Monitors B and F Declared Inoperable, No Trips Indicated"
- AR 00972443, "1H13P670: Average Power Range Monitor B Indicates 13% When Mode Switch in Shutdown"
- AR 00972931, "Wide Range Reactor Level Anomaly During Reactor Shutdown"
- AR 00972469, "Drywell Walkdown Identify Leak on 1E51-F063"
- AR 00973189, "Source Range Monitor B Failed Channel Check"
- AR 00972956, "1-2 Foot Steam Leak at Elbow on Line 1TD16BA"
- AR 00980543, "Inappropriate Shear Stress Allow Used in Calculation SDQ12-24DG12"
- Calculation No. SDQ12-24DG14, "Design of the Spreader Beam and Transport Cart for Pump Internals for Reactor Recirculation "B" Pump/Motor", Revision 10B
- AR 00986713, "NRC Questions/Comments from Review of SDQ12-24DG14"
- AR 00981450, "NRC Identified Foreign Material in Drywell Wetwell"
- AR 00981534, "Clinton Power Station 3rd Quarter Review of Operational Technical Decision Making Evaluations"
- AR 00979700, "Reactor Recirculation B Trip – Resulting in Reactor Scram"
- AR 00979732, "Discharge Valve 1B33F067B Would Not Shut Following Pump Trip"
- AR 00979911, "C1F52: 1E51F302A [sic] and F500A Troubleshooting Information"
- AR 00979704, "Ground Indicated During Scram on DC Motor Control Center 1D"
- AR 00979719, "1B21F500A Bypass Isolation for 'A' Moisture Separator Reheater Would Not Shut"
- AR 00979781, "1DV004B Failed to Stroke Open"
- AR 00979789, "Turbine Tripped Indications Following Scram"
- AR 00979800, "Loss of Sync on Division 1 and 2 Nuclear System Protection System Inverters Following Scram"
- AR 00980940, "Turbine Building Cable Tray Inspection Reveal Cables Degraded"
- AR 00980698, "C1F52 – Turbine Driven Reactor Feed Pump A Exhaust Duct Expansion Bellows Shows Leakage"
- AR 00980655, "1HD074B Body to Bonnet Leak"

#### 1R22 Surveillance Testing (71111.22)

- Clinton Power Station Technical Specifications
- CPS 9052.01, "LPCS/RHR A Pumps & LPCS/RHR A Water Leg Pump Operability," Revision 44d
- CPS 9052.01D001, "LPCS/RHR A Pumps & LPCS/RHR A Water Leg Pump Operability Data Sheet," Revision 42
- CPS 9067.01, "Standby Gas Treatment System Train Flow/Heater Operability," Revision 31a
- CPS 9067.01D001, "SGTS Train Flow/Heater Operability Data Sheet," Revision 27c
- CPS 9070.01, "Control Room HVAC Air Filter Package Operability Test Run," Revision 26c
- CPS 9070.01D001, "Control Room HVAC Air Filter Package Operability Test Run Data Sheet," Revision 25c
- CPS 9080.01, "Diesel Generator 1A Operability – Manual and Quick Start Operability," Revision 51a
- Prompt Investigation #985349, "Division 1 DG Did Not Go To Rated Speed and Voltage as Required"
- Clinton Power Station Updated Final Safety Analysis Report, Chapter 6, "Engineered Safety Features," Revision 11
- AR 00985349, "DG Div 1 Did Not Go To Full Speed When In Run"
- AR 00985660, "Found Relay 1UAYDG291 Bad While Troubleshooting 1DG01KA"
- AR 00992163, "1PL12JA: Replace The Division 1 DG LOCA Bypass Relay "KL"
- AR 01007524, "NRC Questions Regarding VG Surveillance Testing"

#### 1EP4 Emergency Action Level and Emergency Plan Changes

- Clinton Station Radiological Emergency Plan Annex; Revisions 11, 12, 13, and 14

#### 4OA1 Performance Indicator Verification (71151)

- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- Work Order 01288438, "9000.01B20 Log Control Room Surv Log (Mode 1/2/3, D001)," November 25, 2009
- CPS 9000.01, "Control Room Surveillance Log," Revision 35
- HU-AA-101, "Human Performance Tools and Verification Practices," Revision 4
- Performance Indicator Summary, October 16, 2009

#### 4OA2 Identification and Resolution of Problems (71152)

- AR 00972235, "Valve Packing Failure Inside Drywell Resulted in Plant Shutdown Due to Increasing Unidentified Leakage Rate"
- Root Cause Evaluation (AR 00972235), "Valve Packing Failure Inside Drywell Resulted in Plant Shutdown Due to Increasing Unidentified Leakage Rate," October 23, 2009
- Work Order 801164-01, "Validate Packing Torque for the 1E51F063 RCIC Valve," February 5, 2006
- Common Cause Evaluation (AR 00974191), "Perform a Common Cause Evaluation on Issue Reports Initiated Over the Past 18 Months That Identify Technical Human Performance Deficiencies Associated With Operability Evaluations, Past Operability Evaluations, and Prompt Operability Evaluations," December 29, 2009
- Common Cause Evaluation (AR 00915153), "Increase in Security Human Performance Events," June 30, 2009

- Common Cause Evaluation (AR 00958957), "Perform Common Cause Analysis on Potential Gaps in Operations Fundamental Behaviors in the Fundamentals Monitoring System Data," September 22, 2009
- Common Cause Evaluation (AR 00965371), "Site Violations of Security Procedures and/or Regulations," October 9, 2009
- Common Cause Evaluation (AR 00968090), "Apparent Adverse Trend in 2009 Emergent Work Dose," October 30, 2009
- Memorandum RDW-090008, "Engineering Department Operability Evaluation Action Plan," October 9, 2009
- "Third Quarter Coding and Analysis Report," December 4, 2009
- Engineering Change 376154, "Temporary Installation of a 100 Ton Chiller," Revision 0
- Engineering Change 377070, "Raise Temperature Switch Isolation Setpoints For Aux Building Steam Tunnel," Revision 0
- Calculation IP-C-0124, "Setpoint Calculation for Main Steam Line (MSL) ABST Ambient Temperature," Revision 1
- Calculation 3C10-1182-002, "Temperature Transient In The Main Steam Tunnel Due To Steam Leakage," Revision 0
- AR 00975622, "Nuclear Oversight Identified Operability Evaluations Are Made Without Adequate Technical Basis"
- AR 1002395, "Site-Wide Condition Report Trend Code Analysis Quarterly Roll-Up"
- AR 0099376, "Perform Site-Wide Condition Report Trending on Database"
- AR 00974191, "Perform a Common Cause Evaluation on Operability Evaluation Related Issue Reports"
- AR 00948955, "2nd Quarter 2009 Roll-Up Review of Corrective Action Program Trends"
- AR 00956131, "Potential Trends of Low Level Engineering Issues"
- AR 00908324, "IEMA Resident Inspector Identified Potential Trend in Posting Issue Reports"
- AR 00965371, "Potential Trend Security Related Violations"
- AR 00968090, "Potential Adverse Trend Identified"
- AR 00958957, "Perform Common Cause Analysis on Documented Gaps Within Operations"
- AR 00970974, "Non-conservative Change To Auxiliary Building Temperature Trip Setpoint"
- AR 00972140, "Annunciator Procedures Not Revised For ABST Setpoint Change"
- AR 00972235, "Drywell Pressure Rise/Floor Drain Leak Rate"
- AR 00972469, "Drywell Walkdown Identify Leak on 1E51-F063"

#### 40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

- Licensee Event Report 05000461/2009004-00, "Steam Leak Due to Valve Packing Torque Results in Required Unit Shutdown," November 20, 2009
- Licensee Event Report 05000461/2009003-00, "Safety Function Loss Due to No Like for Like Verification of Swapped Relays," November 20, 2009
- Operability Evaluation #970557-02, "1DG01KC – Division 3 Emergency Diesel Generator"
- Apparent Cause Evaluation #969157-10, "Incorrect Installation of K-8 and K-32 Relays in 1E22S001B"
- Work Order #00904453-02, "EM Bench Test/Calibrate Replacement Relay For K8A," September 10, 2007
- Work Order #00904454-02, "EM Bench Test/Calibrate Replacement Relay For K32," September 10, 2007
- Work Order #00904454-03, "OP PMT Verify Generator Output Breaker Closes After Maintenance," September 28, 2007
- AR 00969030, "Resistor in Div3 DG Control Cabinet Displays Signs of Heating"

- AR 00969157, "1E22S001B-K8A For Div III DG Incorrect Part"
- AR 00970557, "Issue With Auto Start Of Div 3 Diesel Following Manual Stop"

## LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AR	Action Request
BI	Barrier Integrity
CFR	Code of Federal Regulations
CPS	Clinton Power Station
DG	Diesel Generator
EAL	Emergency Action Level
EC	Engineering Change
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation and Air Conditioning
IE	Initiating Events
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IST	Inservice Testing
JPMs	Job Performance Measure
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
LORT	Licensed Operator Requalification Training
LPCS	Low Pressure Core Spray
MS	Mitigating Systems
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
RCS	Reactor Coolant System
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SAT	Systems Approach to Training
SDP	Significance Determination Process
SGT	Standby Gas Treatment
SR	Surveillance Requirement
SRA	Senior Reactor Analyst
SSC	Structure, System or Component
TCFZ	Transient Combustible Free Zone
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item

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Sincerely,

*/RA/*

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

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Letter to C. Pardee from M. Ring dated January 25, 2010

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05000461/2009-005

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