



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

July 28, 2009

EA-09-063

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
05000461/2009-003

Dear Mr. Pardee:

On June 30, 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 July 16, 2009, 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 NRC-identified findings of very low safety significance were identified. One of these findings was determined to involve a violation of NRC requirements. Additionally, three licensee-identified violations, which were determined to be of very low safety significance, were reviewed by the inspectors and are listed in this report. One of these licensee-identified violations was the subject of an investigation by the NRC Office of Investigations. This Severity Level IV violation substantiated that a former radioactive waste shipper deliberately failed to maintain complete and accurate information material to the NRC. You have entered this issue into your corrective action program (CAP) and have taken appropriate corrective actions.

Because of the very low safety significance and because they were entered into your CAP, the NRC is treating the above inspector-identified and licensee-identified 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, United States 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.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be 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). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

cc w/encl: Site Vice President - Clinton Power Station
Plant Manager - Clinton Power Station
Manager Regulatory Assurance - Clinton Power Station
Senior Vice President - Midwest Operations
Senior Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director - Licensing and Regulatory Affairs
Manager Licensing - Clinton, Dresden and Quad Cities
Associate General Counsel
Document Control Desk - Licensing
Assistant Attorney General
J. Klinger, State Liaison Officer,
Illinois Emergency Management Agency
Chairman, Illinois Commerce Commission

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SUBJECT: CLINTON POWER STATION NRC INTEGRATED INSPECTION REPORT
05000461/2009-003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2009-003

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station, Unit 1

Location: Clinton, IL

Dates: April 1 through June 30, 2009

Inspectors: B. Kemker, Senior Resident Inspector
D. Lords, Resident Inspector
C. Brown, Reactor Engineer
J. Draper, Reactor Engineer
M. Mitchell, Health Physicist
D. Reeser, Operations Engineer
A. Scarbeary, Reactor Engineer
S. Mischke, Resident Engineer, Illinois Emergency
Management Agency

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

Enclosure

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SUMMARY OF FINDINGS

IR 05000461/2009-003, 04/01/09 – 06/30/09, Clinton Power Station, Unit 1, Operability Evaluations, Surveillance Testing.

This report covers a three-month period of inspection by the resident inspectors and announced baseline inspections by regional inspectors. Two Green findings, one 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. Inspector-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance associated with the licensee's failure to recognize a potential loss of safety function for the suppression pool makeup system following the loss of upper containment pool inventory when spent fuel pool cooling system flow control valve 1FC004A failed closed. No evaluation was performed to ensure that the suppression pool makeup system's safety function would be fulfilled with less than Technical Specification (TS) minimum containment upper pool level. The licensee subsequently performed an evaluation and determined that sufficient margin existed such that the system would have been able to fulfill its safety function with limited margin. Corrective actions to address the inadequate reportability review included training for licensed senior reactor operators and development of a formal operability/reportability review process template. No violation of regulatory requirements was identified.

The finding would become a more significant safety concern if left uncorrected and was therefore, more than a minor concern. Specifically, the failure to correctly recognize and evaluate a potential loss of a safety function of systems, structures, and components when performing operability or past operability evaluations could reasonably result in an unrecognized condition of a system failing to fulfill its safety-related function. Because the suppression pool makeup system was primarily associated with long-term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems Cornerstone. The finding was of very low safety significance because the issue: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its TS allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding affected the cross-cutting area of human performance because the licensee did not have a formal process in place with adequate guidance and training to enable licensed senior reactor operators, whose responsibility it was to evaluate a potential loss of safety function, to correctly do so. As a result, senior reactor operators did not adequately review the TS Bases to understand and evaluate

whether the system was able to fulfill its safety function. (IMC 0305 H.1(a))
(Section 1R15.b.1)

- Green. The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria XII, “Control of Measuring and Test Equipment,” and 10 CFR 50, Appendix B, Criteria XI, “Test Control.” The licensee failed to perform surveillance testing on the Division 3 shutdown service water pump with a lake level gage that was properly controlled and adjusted to ensure that it was readable within the range it was used. The licensee subsequently replaced the unreadable lake level gage section with one that was readable and implemented additional corrective actions to address a lapse in operations standards.

The inspectors concluded that this finding would become a more significant safety concern if left uncorrected and it was therefore more than a minor concern. Specifically, the failure to perform surveillance testing with properly controlled and accurate measuring and test equipment could reasonably result in the failure to identify degraded or inoperable safety-related components. Because the shutdown service water system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems Cornerstone. The finding was of very low safety significance because the issue was a design or qualification deficiency confirmed not to result in loss of operability or availability. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution because the licensee was not properly maintaining the lake level gage to ensure that it would remain usable and did not correct the degraded condition in a timely manner after it was identified. As a result, operators accepted the degraded level gage for continued use. (IMC 0305 P.1(d))
(Section 1R22.b.1)

B. Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee’s corrective action program. The violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

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

On May 30, 2009, the licensee reduced power to about 28 percent to perform control rod pattern adjustments, control rod settle testing, scram time testing, main turbine control/intermediate valve and main steam isolation valve testing, and to implement temporary alterations to out-of-service Turbine Building Heater Bay room fan coolers and to attempt repair of a packing leak on 6A feedwater heater vent valve 1FW029A. The unit was returned to full power the following day upon completion of testing.

On June 6, 2009, the licensee reduced power to about 80 percent to perform control rod pattern adjustments. The unit was returned to full power later the same day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Hot Summer Weather Conditions

a. Inspection Scope

The inspectors evaluated the licensee's preparations for hot summer weather conditions, focusing on the electrical distribution system and the shutdown service water system. During the last two weeks of May 2009, the inspectors performed a detailed review of severe weather and plant de-winterization procedures and performed general area plant walkdowns. The inspectors focused on plant specific design features and implementation of procedures for responding to or mitigating the effects of hot summer weather conditions on the operation of the plant. The inspectors reviewed system health reports and system engineering summer readiness review documents for the above systems. Additionally, the inspectors 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.

.2 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors evaluated the licensee's plant features and procedures for operation and continued availability of offsite and alternate AC power systems. The inspectors

interviewed plant personnel and reviewed the licensee's communications protocols between the Transmission System Operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Aspects considered in the inspectors' review included:

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

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

b. Findings

No findings of significance were identified.

.3 Readiness to Cope with External Flooding

a. Inspection Scope

The inspectors reviewed flood protection barriers and procedures for coping with external flooding at the plant. The Clinton Power Station has limited susceptibility to external flooding as described in Section 3.4.1.1 of the Updated Final Safety Analysis Report (UFSAR) and Section 5.2 of the Individual Plant Examination for External Events Report. The inspectors reviewed CPS 4303.02, "Abnormal Lake Level," Revision 9c, to assess the adequacy of the licensee response to external flooding conditions.

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

In addition, the inspectors performed a walkdown of the Clinton Lake Dam with the cognizant engineer to inspect for any potential degraded conditions such as a build-up of debris at the spillways and ogee; a build-up of trees and shrubs on the downstream side of the dam that could possibly affect drainage; a build-up of sediment and debris on the rip-raps that could possibly cause deterioration of the retaining wall; and general material condition of signs, buoys, and lights. The inspectors also performed a general review and discussion of the Clinton Lake Dam Emergency Action Plan with the cognizant engineer, including flood alert levels, associated actions, and emergency notification requirements.

This inspection constituted one external flooding readiness inspection sample as defined in 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:

- Division 2 Shutdown Service Water System Train during maintenance on the Division 1 Shutdown Service Water System Train,
- Reactor Core Isolation Cooling (RCIC) System (risk-significant single train system), and
- 345 Kilovolt Switchyard.

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 (CAP) with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted three partial system walkdown inspection samples as defined in IP 71111.04.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone CB-3a, Auxiliary Electric Equipment Room - Elevation 781'-0";
- Fire Zone D-6, Division 2 Diesel Generator Room and Daytank Room – Elevation 737'-0";
- Fire Zone D-10, General Access and Heating, Ventilation, and Air Condition Area - Elevation 762'-0";
- Fire Zone F-1a, General Access Area - Elevation 712'-0";
- Fire Zone R-1k, Clean and Dirty Oil Storage Room - Elevation 737'-0";
- Fire Zone CB-5c, Division 1 and 2 Cable Risers - Elevation 781'0"; and
- Fire Zone T-1c, Condensate Pump Room - Elevation 709'-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 CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted seven quarterly fire protection inspection samples as defined in IP 71111.05AQ.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

.1 Annual Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed the licensee's maintenance activities for the 'B' residual heat removal system heat exchanger. The inspectors assessed the as-found and as-left condition of the heat exchanger by direct observation and document reviews to verify that no deficiencies existed that would adversely impact the heat exchangers' ability to transfer heat to the shutdown service water system and to ensure that the licensee was adequately addressing problems that could affect the performance of the heat

exchanger. This maintenance activity was an extensive effort by the licensee to recover safety margin for the heat exchanger by unplugging tubes that had been prematurely plugged. The inspectors observed portions of inspection and cleaning activities, tube recovery activities, and reviewed documentation to verify that the inspection acceptance criteria specified in procedure ER-AA-340-1002, "Service Water Heat Exchanger and Component Inspection Guide," were satisfactorily met.

The inspectors also reviewed the licensee's recent application of protective coating material inside of the Division 2 emergency diesel generator 16-cylinder engine heat exchanger. The inspectors reviewed the engineering change package that evaluated and approved the use of the protective coating material inside safety-related heat exchangers, reviewed the procedure for application of the coating material, and reviewed the work documents used for examination and repair of the heat exchanger prior to application of the coating material. The inspectors discussed questions with plant engineers regarding the licensee's test program for the coating material, controls for the special coating application process, and the licensee's heat exchanger inspection schedule to evaluate the condition of the coating while in service.

This inspection constituted two annual heat sink inspection samples as defined in IP 71111.07.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

The inspectors observed licensed operators during simulator training on May 20, 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.

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

a. Inspection Scope

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

- Planned maintenance during the week of March 30th on the Low Pressure Core Spray System and Shutdown Service Water System;
- Planned maintenance during the week of April 12th on the Division 1 Emergency Diesel Generator and Shutdown Service Water Train;
- Emergent maintenance and troubleshooting following the RCIC Pump Trip during post-maintenance testing on May 7th;
- Emergent maintenance to address elevated temperatures in Turbine Building Heater Bay due to steam leaks and degraded area cooling during the week of April 25th; and
- Planned maintenance to perform steam leak seal repair on Feedwater System Valve 1FW029A on May 30th.

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 CAP with the appropriate significance characterization. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted five 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 00896120, "Unplanned Entry Into Radioactive Spill Off-Normal;"
- AR 00912914, "RC&IS [Rod Control and Information System] Channel Disagree Troubleshooting Results;"
- AR 00895082, "Motor Operated Valve Actuators Have Exceeded Rated Strokes;"
- AR 00919785, "Perform Aggregate Impact Assessment on Missed Surveillances;"
- AR 00846540, "Inservice Testing Surveillance Discrepancies for Excess Flow Check Valves;" and
- AR 00924603, "1FC004A: Spent Fuel Pool Cooling Surge Tank High Level."

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 issues 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 evaluations.

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

This inspection constituted six operability evaluation inspection samples as defined in IP 71111.15.

b. Findings

(1) Unexpected Containment Upper Pool Inventory Loss Due to Failure of Spent Fuel Pool Cooling System Flow Control Valve 1FC004A

Introduction

The inspectors identified a finding of very low safety significance (Green) associated with the licensee's failure to recognize a potential loss of safety function for the suppression pool makeup system following the loss of upper containment pool inventory when spent fuel pool cooling system flow control valve 1FC004A failed closed. Consequently, no evaluation was performed to ensure that the suppression pool makeup system's safety function would be fulfilled with less than TS minimum containment upper pool level. No violation of regulatory requirements was identified because subsequent evaluation by the licensee determined that sufficient margin existed in the total volume of the containment upper pool and suppression pool for the time period of concern.

Description

On May 27, 2009, the spent fuel pool cooling system Train 'A' flow control valve (1FC004A) failed closed resulting in reduced makeup flow to the upper containment pool. During the resultant level transient, upper containment pool level lowered below

the 827'1" elevation, which is the entry condition for TS Limiting Condition for Operation (LCO) 3.6.2.4 (with the steam dryer storage pool gate not open). Level was restored after about 38 minutes and the LCO action requirement was exited. Upon reviewing this event the following morning, the inspectors noted that operators had not recorded the minimum upper pool level in the Control Room logs. There was no indication for upper pool level available to operators so it was not known for certain how low the actual level went. Operators afterwards estimated based on visual observation that the level had dropped to about five inches below the weir wall, or to an elevation of 826' 8".

The inspectors reviewed the Control Room logs and the action request written for the event (AR 00924603) and noted that there was no evaluation of the upper containment pool inventory loss with respect to the potential loss of the suppression pool makeup function. A safety function of the upper pool is to provide additional inventory to the suppression pool following a design basis accident to make up for lost/unavailable water in areas of the drywell and containment that will not drain back to the suppression pool. This is accomplished by two trains of piping with valves that will open in the event of a low suppression pool level coincident with an Engineered Safety Features actuation signal. The TS Bases for LCO 3.6.2.4 states that the accident analysis assumes a dump volume of 14,562 cubic feet (ft³) at 120 °F. It was unclear to the inspectors how the TS value of 827'1" elevation equated to the accident analysis assumed minimum dump volume and how much margin there may be below that elevation. If the level went below this volume, the safety function would not have been maintained and the licensee would have had to report this event as a condition that could have prevented the fulfillment of a safety function in accordance with 10 CFR 50.72(b)(3)(v). The inspectors prompted a more detailed review by the licensee because the operating shift's initial reportability review addressed only a concern with the component (1FC004A) failure and potential radiation levels in the containment.

In response to the inspectors' questions, the licensee prepared EC 375822, "Review of Upper Pool Level for Suppression Pool Dump." The calculation concluded that at elevation 826' 8", there was 15,041.9 ft³ of water available to meet the safety function - a margin of 390 ft³. This event was therefore determined not to be a loss of safety function. The inspectors reviewed EC 375822 and discussed questions with the licensee's engineering staff and concurred with the conclusion based on the upper pool level drop estimate provided by operations. At the end of this inspection period, the licensee had identified several corrective actions to address the inadequate reportability review. These included additional training for operations shift managers on performing reportability evaluations, briefings for senior reactor operators on the need to review the TS Bases for loss of safety function considerations when evaluating events for potential reportability, the development of a formal past operability/reportability review process template, and engineering review of possible means to provide containment upper pool level indication.

Analysis

The inspectors determined that the licensee's failure to evaluate the upper containment pool inventory loss with respect to the potential loss of the suppression pool makeup function was a licensee performance deficiency warranting a significance evaluation. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors reviewed the examples of minor issues in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of

Minor Issues,” and found no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, “Issue Screening,” the inspectors determined that the failure to correctly recognize and evaluate a potential loss of a safety function of systems, structures, and components (SSCs) when performing operability or reportability evaluations would become a more significant safety concern if left uncorrected and was therefore more than a minor concern because it could reasonably result in an unrecognized condition of an SSC failing to fulfill its safety-related function. Because the suppression pool makeup system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems Cornerstone. 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 that this finding was a licensee performance deficiency of very low safety significance (Green) because the finding: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its TS allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, the licensee did not have a formal process in place with adequate guidance and training to enable licensed senior reactor operators, whose responsibility it was to evaluate a potential loss of safety function, to correctly do so. As a result, senior reactor operators did not adequately review the TS Bases to understand and evaluate whether the system was able to fulfill its safety function. (IMC 0305 H.1(a))

Enforcement

No violation of regulatory requirements was identified. This issue is considered to be a finding (**FIN 05000461/2009003-01**). The licensee entered this finding into its CAP as AR 00932706.

(2) Inservice Testing Surveillance Discrepancies for Excess Flow Check Valves

The licensee identified that nine excess flow check valves were incorrectly removed from its Inservice Testing Program in 2002. The valves have a safety function to re-open following a design basis accident to provide instrumentation assumed to be available post-accident. The valves have not been tested since the licensee’s refueling outage in 2000. This issue is discussed in greater detail in Section 4OA2.3.b.(2) of this inspection report. The inspectors reviewed the licensee’s operability evaluation for the excess flow check valves and have discussed the evaluation with the licensee’s staff. At the end of this inspection period, open questions remained with the operability evaluation. This issue is considered to be an Unresolved Item (**URI 05000461/2009003-02**) pending additional review and resolution of open questions.

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the following temporary plant modifications:

- ECR 390853, "Route Cooling from 1WO02SY and 1WO02SC to Heater Bay (Replacing Margin from 1WO02SJ 1WO02SN)," and
- ECR 375901, "Install Auxiliary Fans on Turbine Building Main Steamline Area Coolers 1WO05SM & 1WO05SN1."

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

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

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

b. Findings

No findings of significance were identified.

.2 Permanent Modifications

a. Inspection Scope

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

- EC 369611, "Address Concern with Location of Division 3 Diesel Generator Grounding Resistor."

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

- the compatibility, functional properties, environmental qualification, seismic qualification, and classification of materials and replacement components were acceptable;
- the structural integrity of the SSCs would be acceptable for accident/event conditions;
- the implementation of the modification did not impair key safety functions;
- no unintended system interactions occurred;

- the affected significant plant procedures, such as normal, abnormal, and emergency operating procedures, testing and surveillance procedures, and training were identified and necessary changes were completed;
- the design and licensing documents were either updated or were in the process of being updated to reflect the modification;
- the changes to the facility and procedures, as described in the UFSAR, were appropriately reviewed and documented in accordance with 10 CFR 50.59;
- the system performance characteristics, including energy needs affected by the modification continued to meet the design basis;
- the modification test acceptance criteria were met; and
- the modification design assumptions were appropriate.

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

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

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

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 1SX032 (Shutdown Service Water to Low Pressure Core Spray Room Cooler Isolation Valve);
- Unplanned maintenance on the RCIC Pump following failure of overspeed trip linkage during testing;
- Planned maintenance on the Standby Gas Treatment System;
- Planned maintenance to replace Plant Service Water Pump 'A'; and
- Planned maintenance on Diesel Driven Fire Pump 'A'.

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

In addition, the inspectors reviewed CAP documents associated with post-maintenance testing to verify that identified problems were entered into the licensee's CAP with the

appropriate characterization. Selected action requests were reviewed to verify that the corrective actions were appropriate and implemented as scheduled.

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

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 9069.01, "Shutdown Service Water Pump Operability Test," (Inservice Test);
- CPS 9431.64, "Average Power Range Monitor (APRM) Channel Calibration 6-Month;"
- CPS 9071.14, "Fire Protection Diesel Generator Bay 1C CO2 System Auto Actuation Test;" and
- CPS 9437.05, "Remote Shutdown System RCIC Flow E51-N003 Channel Calibration."

The inspectors observed selected portions of the test activities to verify that the testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify that equipment performance was consistent with safety analysis and design basis assumptions, and that testing acceptance criteria were satisfied.

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

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

b. Findings

(1) Failure to Perform Surveillance Testing on the Division 3 Shutdown Service Water Pump With Adequate Measuring and Test Equipment

Introduction

The inspectors identified a finding of very low safety significance (Green) with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria XI and XII. The licensee failed to perform surveillance testing on the Division 3 shutdown service water pump with a lake level gage that was properly controlled and adjusted to ensure that it was readable within the range it was used.

Discussion

On March 27, 2009, the inspectors observed the performance of CPS 9069.01, "Shutdown Service Water Operability Test," for the Division 3 shutdown service water pump. The inspectors observed that a non-licensed operator recorded the lake level in Step 8.5.17 of the procedure to be at 691 feet. The actual lake level is used in the surveillance test procedure to determine the pump's suction lift pressure. The pump's suction lift pressure is then used in determining the pump's differential pressure, for which the licensee established specific acceptance criteria based on the inservice testing requirements contained in American Society of Mechanical Engineers and American National Standards Institute (ASME/ANSI), OMa 1988, Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants." The inspectors went outside with the operator to the Lake Screen House intake where the lake level gage is mounted to the wall. The gage has painted numbers every foot and horizontal lines every 1/2 foot along the vertical scale. The lake level gage appeared to be faded or worn up to a higher previous lake level, such that the markings were not visible below 693 feet. The inspectors asked the operator how he was able to determine the lake level to be 691 feet when the scale was clearly not readable below 693 feet. The operator replied that he could see a very faint mark on the scale at 691 feet. However, since no markings were visible below 693 feet it appeared to the inspectors that the operator was estimating the lake level as best he could relative to the 693 foot mark on the level gage.

An action request (AR 00823311) and work request (WR 282797) were previously written in September 2008 to correct the lake level gage problem, but work was not performed prior to the winter. The action request highlighted an operations' concern that the lake level gage would be used to determine whether entry into the high lake level abnormal operating procedure CPS 4303.02, "Abnormal Lake Level," was required. Without accurate markings on the lake level gage below 693 feet it would be difficult for operators to track/trend lake level increase prior to the lake level reaching the entry condition of 693 feet in CPS 4303.02. The inspectors noted that the action request did not mention that the level gage was also used to record lake level in the shutdown service water pump operability surveillance test procedure. The inspectors found that this surveillance test procedure was performed once each quarter for each of the three shutdown service water pumps with multiple operators using this unreadable lake level gage, recording the lake level in quality records, and calculating pump performance parameters used to evaluate the operability of all three shutdown service water pumps for many months.

In response to the inspectors' questions, the licensee discontinued use of the lake level gage during performance of the surveillance test procedure until the problem could be corrected and documented the issue in AR 00908295. The lake level gage problem was subsequently corrected on April 23, 2009. The inspectors reviewed the test results and concluded that sufficient margin existed in the calculation for the pump's differential pressure with respect to the acceptance criteria such that the Division 3 shutdown service water pump was operable. The licensee completed an evaluation to assess the Operations Department standards aspects of this issue and subsequently communicated the results of the evaluation to the Operations Department in a Night Order.

In the meantime, the inspectors noted that on April 15, 2009, operators performed the same surveillance test for the Division 2 shutdown service water pump. The Inservice Testing Program Engineer reviewed the completed surveillance test data and found that instead of using the lake level gage installed at the Lake Screen House, operators used data obtained from another lake level indicator maintained by the U.S. Geologic Survey (USGS) near the Clinton Lake Dam. However, at the time of the surveillance test, the USGS instrument had not been evaluated against the requirements of OMa 1988, Part 6 and 10 CFR 50, Appendix B. The Inservice Testing Program Engineer wrote AR 00911283 to identify that the surveillance test was performed with the unapproved test instrument. The inspectors concurred with the licensee's conclusion that while the operators' use of the unapproved instrument was inappropriate, the lake level instrument was accurate and the Division 2 shutdown service water pump was operable. The licensee is evaluating a change to the UFSAR to describe the USGS instrument and the possible use of this instrument going forward for the surveillance test.

Analysis

The inspectors determined that the licensee's failure to perform surveillance testing on the Division 3 shutdown service water pump with a lake level gage that was properly controlled and adjusted 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 there were no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that this issue would become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to perform surveillance testing with properly controlled and accurate measuring and test equipment could reasonably result in the failure to identify degraded or inoperable safety related components. Because the shutdown service water system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems Cornerstone. 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 that this finding was a licensee performance deficiency of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or availability.

Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution. Specifically, the licensee was not properly maintaining the lake level gage to ensure that it would remain usable and did not correct the degraded condition in a timely manner after it was identified. As a result, operators accepted the degraded level gage for continued use. (IMC 0305 P.1(d))

Enforcement

Title 10 CFR 50, Appendix B, Criteria XII, "Control of Measuring and Test Equipment," requires that measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits. In addition, 10 CFR 50, Appendix B, Criteria XI, "Test Control," requires, in part, that adequate test instrumentation is available and used. Contrary to the above, the licensee failed to properly control and adjust the lake level gage at the Lake Screen House in order to maintain its accuracy within the range it was used during performance of TS surveillance testing in accordance with CPS 9069.01, "Shutdown Service Water Operability Test," an activity affecting quality. 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 05000461/2009003-03**). The licensee entered this violation into its CAP as AR 00908295.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a full scale emergency preparedness drill on April 29, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. This drill was planned to be evaluated and was included in performance indicator data regarding drill and exercise performance. The inspectors observed emergency response operations in the Operations Simulator and Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee's drill critique to compare any inspector-observed weaknesses with those identified by the licensee's staff in order to evaluate the critique and to verify whether the licensee's staff was properly identifying weaknesses and entering them into the CAP.

This inspection constituted one emergency preparedness simulator-based training inspection sample as defined in IP 71114.06.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors reviewed the licensee's Occupational Exposure Control Cornerstone performance indicator (PI) to determine whether the conditions resulting in any PI occurrences had been evaluated and whether identified problems had been entered into the licensee's CAP for resolution.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

.2 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed licensee controls and surveys for the following radiologically significant work within radiation areas, high radiation areas, and airborne radioactivity areas in the plant to determine if radiological controls including surveys, postings, and barricades were acceptable:

- RCIC System Surveillance;
- Radwaste Tank Pump Room Modifications; and
- Spent Resin Transfer to Liner.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed the radiation work permits (RWPs) and work packages used to access these areas and other high radiation work areas. The inspectors assessed the work control instructions and control barriers specified by the licensee. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. The inspectors interviewed workers to verify that they were aware of the actions required if their electronic dosimeters noticeably malfunctioned or alarmed.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors walked down and surveyed (using an NRC survey meter) these areas to verify that the prescribed RWP, procedure, and engineering controls were in place; that licensee surveys and postings were complete and accurate; and that air samplers were properly located.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed RWPs for airborne radioactivity areas to verify barrier integrity and engineering controls performance (e.g., high-efficiency particulate air ventilation system operation) and to determine if there was a potential for individual worker internal exposures in excess of 50 millirem committed effective dose equivalent (CEDE). There were no airborne radioactivity areas or situations with potential intake that could result in greater than 50 millirem CEDE.

Work areas having a history of, or the potential for, airborne transuranics were evaluated to verify that the licensee had considered the potential for transuranic isotopes and had provided appropriate worker protection.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors assessed the adequacy of the licensee's internal dose assessment process for internal exposures in excess of 50 millirem committed effective dose equivalent. There were no internal exposures greater than 50 millirem committed effective dose equivalent.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed a sample of the licensee's self-assessments, audits, Licensee Event Reports, and Special Reports related to the access control program to verify that identified problems were entered into the CAP for resolution.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed corrective action reports related to access controls and any high radiation area radiological incidents (issues that did not count as PI occurrences identified by the licensee in high radiation areas less than 1R/hr). Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of Non-Cited Violations tracked in the corrective action system; and
- implementation/consideration of risk-significant operational experience feedback.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors evaluated the licensee's process for problem identification, characterization, and prioritization and verified that problems were entered into the CAP and resolved. For repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution, the inspectors verified that the licensee's self-assessment activities were capable of identifying and addressing these deficiencies.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed licensee documentation packages for all PI events occurring since the last inspection to determine if any of these PI events involved dose rates in excess of 25 R/hr at 30 centimeters or in excess of 500 R/hr at 1 meter. Barriers were evaluated for failure and to determine if there were any barriers left to prevent personnel access. Unintended exposures exceeding 100 millirem total effective dose equivalent (or 5 rem shallow dose equivalent or 1.5 rem lens dose equivalent) were evaluated to determine if there were any regulatory overexposures or if there was a substantial potential for an overexposure.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following three jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- RCIC System Surveillance;
- Radwaste Tank Pump Room Modifications; and
- Spent Resin Transfer to Liner.

The inspectors reviewed radiological job requirements for these activities, including RWP requirements and work procedure requirements.

This inspection constitutes one sample as defined in IP 71121.01.

Job performance was observed with respect to the radiological control requirements to assess whether radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. The inspectors evaluated the adequacy of radiological controls, including required radiation, contamination, and airborne surveys for system breaches; radiation protection job coverage, including any applicable audio and visual surveillance for remote job coverage; and contamination controls.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed radiological work in high radiation work areas having significant dose rate gradients to evaluate whether the licensee adequately monitored exposure to personnel and to assess the adequacy of licensee controls. These work areas involved areas where the dose rate gradients were severe; thereby increasing the necessity of providing multiple dosimeters or enhanced job controls. There were no jobs requiring monitoring due to dose gradients.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

.5 High Risk Significant, High Dose Rate, High Radiation Area and Very High Radiation Area Controls

a. Inspection Scope

The inspectors held discussions with the Radiation Protection Manager concerning high dose rate, high radiation area and very high radiation area controls and procedures, including procedural changes that had occurred since the last inspection, in order to assess whether any procedure modifications substantially reduced the effectiveness and level of worker protection.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors discussed with radiation protection supervisors the controls that were in place for special areas of the plant that had the potential to become very high radiation areas during certain plant operations. The inspectors assessed if plant operations required communication beforehand with the radiation protection group, so as to allow corresponding timely actions to properly post and control the radiation hazards.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors conducted plant walkdowns to assess the posting and locking of entrances to high dose rate high radiation areas and very high radiation areas.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified

.6 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation safety work requirements. The inspectors evaluated whether workers were aware of any significant radiological conditions in their workplace, of the RWP controls and limits in place, and of the level of radiological

hazards present. The inspectors also observed worker performance to determine if workers accounted for these radiological hazards.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed radiological problem reports for which the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. Problems or issues with planned or completed corrective actions were discussed with the Radiation Protection Manager

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation protection technician performance with respect to radiation safety work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

This inspection constitutes one sample as defined in IP 71121.01.

The inspectors reviewed radiological problem reports for which the cause of the event was radiation protection technician error to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

This inspection constitutes one sample as defined in IP 71121.01.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Review of Submitted Quarterly Data

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the Second Quarter 2009 Performance Indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

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

b. Findings

No findings of significance were identified.

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 CAP 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 CAP 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 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed repetitive or closely related issues documented in the licensee's CAP to look for trends not previously identified. 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.

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

- Apparent Cause Evaluation Report, "Unidentified Leak in Turbine Building Results in Tritium Detection" (AR 00862428)

- Apparent Cause Evaluation Report, “1SX063A Valve Operator Removed With Danger Tag On Handwheel” (AR 00824278)

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

b. Findings and Observations

No findings of significance were identified.

.3 Annual In-Depth Review Sample

a. Inspection Scope

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

- AR 00766213, "Missed Operational Requirements Manual Surveillance in C1R11," and
- AR 00846540, “Inservice Testing Surveillance Discrepancies for Excess Flow Check Valves.”

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) Missed Operational Requirements Manual Surveillance in C1R11

Introduction

The inspectors identified that the licensee did not formally track missed surveillance tests in order to ensure that missed surveillance tests were performed at the first reasonable opportunity and therefore did not know how many missed surveillances existed. Because the inspectors found no current missed surveillance tests that could be performed with the unit on line and because there has been no unit outage since the

discovery of the missed surveillances, no violation of regulatory requirements was identified.

Discussion

The licensee discovered during its review of inservice inspections performed during the previous refueling outage (C1R11) that it had failed to perform a pressure decay test on the instrument air lines and accumulators supplying both feedwater containment outboard isolation check valves (1B21-F032A and 1B21-F032B) in accordance Section 8.16 of CPS 9061.11, "Instrument Air Check Valve Operability and Pipe Pressure Test." This did not meet a commitment made in 2007 to the NRC in Relief Request 4212, to perform this test each refueling outage in lieu of the VT-2 visual examination required by the ASME Code, Section XI, Paragraphs IWC-2500 and IWD-2500. The licensee determined in its evaluation that the preventative maintenance task that implements the portions of the surveillance test procedure that are performed every outage was not revised to reflect the new commitment. The surveillance test procedure was revised to include Section 8.16 in October 2007, but the preventive maintenance task that implements this section of the surveillance test procedure was not revised. Therefore, the work order used to perform these tasks in C1R11 (WO 910664) was not revised to reflect the change. Refer to Section 4OA7.3 for details of the licensee-identified violation.

The Inservice Testing Program is required by TS 5.5.6. For a missed surveillance test, TS Surveillance Requirement (TSSR) 3.0.3 allows the licensee to delay entry into an applicable LCO for 24 hours from the time of discovery or up to the limit of the specified frequency, whichever is greater. A risk evaluation is required for any surveillance delayed greater than 24 hours and the risk impact shall be managed.

According to the TS Bases for TSSR 3.0.3, "[w]hile up to 24 hours or the limit of the specified frequency is provided to perform the missed surveillance, it is expected that the missed surveillance will be performed at the first reasonable opportunity." Consistent with this statement, the inspectors asked the licensee how it will ensure that this missed surveillance test will be performed at the "first reasonable opportunity." According to the surveillance test procedure prerequisites, the unit would have to be in Modes 4 or 5 with the feedwater system secured in order to perform the test. The inspectors reviewed the licensee's CAP documents related to this missed surveillance test and found that an action item to schedule the test for the next refueling outage was completed. The inspectors confirmed with the licensee that the surveillance test was in the refueling outage schedule. The inspectors then reviewed the licensee's forced outage list and noted that this surveillance test was not on it. Because the "first reasonable opportunity" may be a forced outage if one occurs before the next refueling outage, the inspectors asked the licensee why this test would not be included on the forced outage list to evaluate performing it then if plant conditions exist. The inspectors noted that by not having this surveillance test on the forced outage list, the decision not to perform it had essentially already been made for the licensee's management team, instead of allowing the management team to make the decision at the start of a forced outage based upon the considerations discussed in the TS Bases for TSSR 3.0.3. In response to the inspectors' questions, the licensee wrote AR 00903527 to include this missed surveillance test into its forced outage scope consideration.

The inspectors asked the licensee what formal process existed to track missed surveillance tests in order to ensure that the missed surveillance tests were performed at the "first reasonable opportunity." The inspectors noted that without some formal tracking method in place, the missed surveillance tests may be forgotten until the next scheduled performance date without any consideration of the "first reasonable opportunity" to perform it. When it became clear that no formal tracking process existed for missed surveillances aside from the individual CAP action requests, the inspectors asked the licensee how many missed surveillances existed. In response to the inspectors' questions, the licensee wrote AR 00895088 to evaluate the disposition of outstanding missed surveillances. The licensee subsequently identified a total of 19 plant valves for which surveillance testing had not been completed as required. The inspectors confirmed with the licensee that the unit would have to be in a shutdown condition in order to test any of these valves. The inspectors also noted that none of these valves were on the licensee's forced outage list. Because none of the above missed surveillance tests can be performed with the unit on line and because there has been no unit outage since the discovery of the missed surveillances, no violation of TSSR 3.0.3 was identified.

In response to the inspectors' observations and in order to formally track missed surveillance tests to assure the timely completion of missed surveillances, operators list TSSR 3.0.3 entries along with TS LCO entries in the Operations LCO Actions database. The licensee has also included all of the above missed surveillance tests on its forced outage list.

(2) Inservice Testing Surveillance Discrepancies for Excess Flow Check Valves

Introduction

The inspectors noted that the licensee utilized the relief afforded by TSSR 3.0.3 for a missed surveillance to allow up to the limit of the specified frequency to perform missed surveillances and questioned whether doing so was appropriate for testing that had been discontinued many years before and therefore not performed for multiple test frequency periods. This issue is considered an Unresolved Item pending additional review by the NRC staff.

Discussion

The licensee identified that nine excess flow check valves were incorrectly removed from its Inservice Testing Program in 2002. The valves have a safety function to re-open following a design basis accident to provide instrumentation assumed to be available post accident. The ASME/ANSI Operations and Maintenance Code (OMa 1988, Part 10) would require a position verification test for these valves once every two years and an opening test once every three months, with exceptions allowed for refueling cycle frequency. The valves have not been tested since 2000. The licensee discovered this problem during its extent of condition review of another inservice testing issue.

Previously, the licensee had identified that multiple spent fuel pool cooling system components (i.e., pumps and valves) were also incorrectly removed from its Inservice Testing Program in 2002. The licensee subsequently reestablished the appropriate inservice testing frequency for the spent fuel pool cooling system components and has completed the required testing. The licensee's extent of condition review identified

additional examples where plant components were incorrectly removed from its Inservice Testing Program, or where the applicable testing requirements were not correctly implemented in 2002. These examples included nine excess flow check valves (1CM002A, 1CM002B, 1CM003A, 1E22-F330, 1E22-F332, 1E51-F377A, 1E51-F377B, 1SM008 and 1SM009), the Division 3 shutdown service water pump discharge check valve (1SX001C), and the diesel fuel oil transfer pump discharge relief valves (1DO005A, 1DO005B, and 1DO005C).

Upon discovery of the above testing issues, the licensee utilized the relief afforded by TSSR 3.0.3 for a missed surveillance to allow up to the limit of the specified frequency to perform missed surveillances. During review of the excess flow check valve testing issue, the inspectors questioned the licensee whether it was appropriate to utilize the relief allowed by TSSR 3.0.3 because these did not appear to be cases of a single missed surveillance.

Recently, the NRC staff concluded in Task Interface Agreement (TIA) 2008-004, "Evaluation of Application of Technical Specification (TS) 4.0.3, 'Surveillance Requirement Applicability,' at Pilgrim;" that a missed surveillance (i.e., inadvertently exceeded surveillance) is not equivalent to a never-performed surveillance for which TSSR 3.0.3 would not apply. The basis for the relief allowed by TSSR 3.0.3 is that the past surveillance testing history provides a level of confidence that the component or system is most likely operable. A surveillance that has never been performed does not have this basis for a presumption of operability. The NRC staff is currently working with the industry-sponsored Technical Specifications Task Force to develop a framework for the treatment of surveillances that have never been performed.

Consistent with the "level of confidence" argument that was provided in TIA 2008-004, the inspectors questioned whether it would be correct for the licensee to apply TSSR 3.0.3 for the excess flow check valves. After all, the licensee removed the valves from its Inservice Testing Program and discontinued testing, now exceeding four previously defined test frequency periods without testing the valves. Therefore, the basis for a presumption of operability may not exist because the licensee was not demonstrating operability by performing the required testing of the excess flow check valves all along.

An Unresolved Item (**URI 05000461/2009003-04**) will track the NRC staff's review of this issue to determine if additional NRC guidance is necessary to specify whether TSSR 3.0.3 applies in the case where more than one surveillance interval is exceeded.

The licensee successfully completed testing one of the check valves that could be tested with the unit on line, has completed a risk evaluation, and has scheduled the performance of the other eight "missed" surveillance tests in the next refueling outage. The licensee has concluded that testing of the remaining eight valves would require cold shutdown conditions. The inspectors used the "level of confidence" argument provided in TIA 2008-004 as the basis to question the operability of the valves. Subsequently, the licensee revised the calculation defining the design basis function for the excess flow check valves to remove the active safety function of five of the check valves. Of the remaining four check valves that have an active safety function (1CM002B, 1E22-F332, 1E51-F377B, and 1SM008), one check valve (1E22-F332) was tested satisfactorily. In response to the inspectors' questions, the licensee then performed an operability evaluation for the remaining three check valves. The inspectors' review of this

operability evaluation and resolution of questions was pending at the completion of this inspection period. An additional URI will track the NRC staff's review of the excess flow check valve operability evaluation as discussed in Section 1R15.b.(2) of this report.

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.

- Multiple tours of operations within the security alarm stations,
- Tours of selected security officer response posts,
- Direct observation of personnel entry screening operations within the plant's Main Access Facility, and
- Security force shift turnover activities.

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.

.2 Closed URI 05000461/2007004-01, "Shipment Total Quantity Re-characterized After Shipping"

The inspectors reviewed a shipment of phase separator resins that was shipped from Clinton Power Station on September 30, 2005, and was delivered to a vendor on October 1, 2005. The total curie quantity in the shipment was in excess of the vendor's Agreement State license limits. The vendor communicated this discrepancy to shipping personnel at Clinton Power Station on October 3, 2005. The shipper then re-characterized the total quantity of the shipment by reviewing dose rate survey data and applying a "dose to curie" methodology. On or about October 5, 2005, the shipper documented the revised quantity of radioactivity (291 curies) on a new set of shipping paperwork.

The NRC completed its review of the issue and identified a deliberate violation of NRC requirements, which is documented in Section 4OA7.2 of this report. Based on that review, the NRC concluded that the shipper deliberately failed to maintain complete and accurate information material to the NRC. After the shipper re-characterized the total quantity of the shipment, he developed a new set of shipping paperwork and backdated that paperwork to the original shipping date of September 30, 2005. The shipper then removed the original paperwork from the licensee's files and, ultimately, discarded the original paperwork when he left the licensee's employment.

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 July 16, 2009. 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:

- Access Control to Radiologically Restricted Areas Inspection with Mr. F. Kearney and other members of the licensee's staff on May 8, 2009. The inspector confirmed that none of the potential report input discussed was considered proprietary.

.3 Regulatory Performance Meeting

On May 11, 2009, the NRC held a meeting with the licensee at the Clinton Power Station to discuss the Clinton Power Station annual plant performance assessment.

.4 Public Meeting

On May 11, 2009, the NRC held a public open house meeting at the Clinton Elk's Lodge to engage interested members of the public on the performance of the Clinton Power Station and the role of the NRC in ensuring safe plant operations upon completion of the Clinton Power Station annual plant performance assessment in accordance with Section 06.04 of IMC 0305.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green and Severity Level IV) were identified by the licensee. The violations met the criteria of Section VI of the NRC Enforcement Policy, for dispositioning as Non-Cited Violations.

.1 Transfer of Radioactive Material in Excess of a Licensed Limit

10 CFR 20.2001, (a)(1) requires that a licensee dispose of licensed material only by transfer to an authorized recipient as provided in 10 CFR 20.2006.

Contrary to the above, on September 30, 2005, the licensee made a shipment of phase separator resin (Shipment Number W05-023), totaling 614 curies to a waste processor who was not authorized by Agreement State license to receive more than 400 curies. Specifically, the licensee's authorized shipper failed to completely read the receiver's license limitations during the process of preparing the shipment, and the processor personnel did not identify the error when confirming that they were ready to receive the shipment. The recipient was authorized to receive radioactive material in this form and had an occupational safety program in place to protect personnel.

This was identified in the licensee's corrective action program (AR 567081). The finding was determined to be of very low safety significance (Green) because it did not involve radioactive material control, effluent release, environmental monitoring, transportation, or Part 61.

.2 Radioactive Waste Shipper Failed to Maintain Complete and Accurate Information Material to the NRC

10 CFR 50.9 requires, in part, that information required by the Commission to be maintained by a licensee shall be complete and accurate in all material respects.

10 CFR 20.2108 requires, in part, that each licensee maintain records of disposal of licensed material made under 10 CFR 61 until the Commission terminates the license.

Contrary to the above, on October 5, 2005, information required by the Commission to be maintained by the licensee was not accurate in all material respects. Specifically, the completed copy of NRC Form 540 for Shipment Number W05-023 on September 30, 2005, was not accurate, in that, the shipment quantity was modified and the form was deliberately backdated to the original date of shipment (September 30, 2005). The licensee used the NRC Form 540 to meet the requirements of 10 CFR 20.2108. Based on an Office of Investigations investigation (OI Case No. 3-2007-026), the NRC staff concluded that the authorized shipper's backdating of NRC Form 540 was a deliberate violation.

However, because the violation had limited actual radiological significance and low potential significance, the violation involved the acts of a low-level individual resulting from an isolated action without management involvement, there was no economic or other advantage gained as a result of the violation, and adequate remedial action was taken, the violation was categorized at Severity Level IV. Because the violation is of very low safety significance, it meets the additional criteria in Section VI.A.1 of the NRC Enforcement Policy and because it has been entered into the corrective action system (AR 567081) it is being treated, after consultation with the Director, Office of Enforcement, as a Non-Cited Violation.

.3 Failure to Fully Implement Commission Granted Relief and Alternative Requirements

10 CFR 50.55a, Paragraph (f)(4)(ii) requires, in part, "Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety . . . must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section. . . ."

10 CFR 50.55a, Paragraph (f)(5)(iii) requires, in part, "If the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit . . . information to support the determination."

10 CFR 50.55a, Paragraph (f)(6)(i) requires, in part, "The Commission will evaluate determinations under paragraph (f)(5) of this section that code requirements are impractical. The Commission may grant relief and may impose alternative requirements as it determines is authorized by law"

Contrary to the above, the licensee failed to fully implement the Commission granted relief and alternative requirements contained in Relief Request 4212, Revision 1, during

the Cycle 11 refueling outage. Specifically, the licensee failed to perform a pressure decay test on the instrument air lines and accumulators supplying both feedwater containment outboard isolation check valves (1B21-F032A and 1B21-F032B) each refueling outage in lieu of the VT-2 visual examination required by the ASME Code, Section XI, Paragraphs IWC-2500 and IWD-2500. The licensee entered this violation into its CAP as AR 00766213. The finding was determined to be of very low safety significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or availability.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Bunte, Design Engineering Manager
S. Clary, Engineering Programs Manager
T. Conner, Operations Director
J. Cunningham, Acting Operations Director
R. Frantz, Regulatory Assurance
N. Hightower, Radiation Protection Operations Manager
K. Leffel, Operations Support Manager
M. Kanavos, Plant Manager
F. Kearney, Site Vice President
J. Peterson, Regulatory Assurance
M. Reandeanu, Shift Operations Superintendent
J. Stovall, Radiation Protection Manager
J. Ufert, Fire Marshall
C. VanDenburgh, Nuclear Oversight Manager
R. Weber, Engineering Director
C. Williamson, Security Manager

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000461/2009003-01	FIN	Failure to Evaluate Safety Function of Suppression Pool Makeup System (Section 1R15.b.(1))
05000461/2009003-02	URI	Review of Excess Flow Check Valve Operability Evaluation In Lieu of Testing (Section 1R15.b.(2))
05000461/2009003-03	NCV	Failure to Perform Surveillance Testing on the Division 3 Shutdown Service Water Pump With Adequate Measuring and Test Equipment (Section 1R22.b.(1))
05000461/2009003-04	URI	Review of Applicability of TSSR 3.0.3 to Multiple Missed Surveillance Intervals for Excess Flow Check Valves (Section 4OA2.3.b.(2))

Closed

05000461/2009003-01	FIN	Failure to Evaluate Safety Function of Suppression Pool Makeup System (Section 1R15.b.(1))
05000461/2009003-03	NCV	Failure to Perform Surveillance Testing on the Division 3 Shutdown Service Water Pump With Adequate Measuring and Test Equipment (Section 1R22.b.(1))
05000461/2007004-01	URI	Shipment Total Quantity Re-characterized After Shipping (Section 4OA5.2)

Discussed

None		

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection (71111.01)

- NERC Standards (dated 7/21/08)
- CIP-001, "Sabotage Reporting,"
- EOP-004, "Disturbance Reporting,"
- FAC-002, "Coordination of plans for new facilities,"
- IRO-001, "Reliability Coordination – Responsibilities and Authorities,"
- TOP-001, "Reliability Responsibilities and Authorities,"
- VAR-002, "Generator Operation for Maintaining Network Voltage Schedules,"
- OP-CL-108-107-1001, "Interface between AmerenIP and Clinton Power Station for Switchyard Operations, Maintenance, and Engineering," Revision 8
- AR 00900345, "Failure to Identify Margin Levels, Action Levels and Adverse Condition Monitoring Plan (ACMP),"
- AR 00899266, "Unexpected 345 kv Grid Disturbances,"
- AR 00899361, "Grid Disturbance on Broken, Latham, and Rising Lines,"
- AR 00786685, "Grid Disturbance Causes Nuclear System Protection System (NSPS) Inverter Trouble,"
- AR 00801895, "Broken Line 0SY4504 A-Phase Elevated in Temperature,"
- AR 00786563, "Unexpected 5110-2E RLY/Signal Fail Line 4535 Transfer Trip,"
- AR 00803813, "Weather Front Causes Ventilation Trouble/Grid Transient,"
- OP-CL-108-107-1002, "Degraded Grid Actions," Revision 2
- CPS 9082.01, "Offsite Source Power Verification," Revision 38b
- Nuclear Plant Operating Agreement for Clinton Power Station
- Second Revised Interconnection Agreement, dated 11/4/03
- Clinton Power Station Individual Plant Examination for External Events Final Report, September 1995
- Clinton Power Station Updated Final Safety Analysis Report, Section 3.4, "Water Level (Flood) Design," Revision 11
- CPS 4303.02, "Abnormal Lake Level," Revision 9c
- Letter from D. Benyak, Director of Licensing and Regulatory Affairs, Exelon Generation Company, LLC to U.S. Nuclear Regulatory Commission, "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
- AR 00891453, "Electrical Duct Manhole Overflows Following Heavy Rainfall"
- AR 00817567, "Circulating Water Valve Pit Flooded During Storm"
- AR 00893207, "Water Observed Flowing From Manhole Covers"
- CPS 1860.02, "Summer Readiness Operation," Revision 0a
- CPS 1860.01C002, "Cold Weather Restoration Checklist," Revision 5b
- CPS 1860.01C003, "Cold Weather Heater and Heat Trace Operability Checklist," Revision 0e,
- WC-AA-107, "Seasonal Readiness Re-Write," Revision 5
- Work Order 01172851, "MM 1SX025A: Replace Valve Due to Degrading Body," October 21, 2008
- Work Order 00587014, "MM 1SX257 Plugged," May 1, 2009

- AR 00831716, "Clinton 2009 Site Summer Readiness Actions"
- AR 00916787, "Corporate Transformer Summer Readiness Assessment"
- AR 00920401, "Summer Readiness Discrepancies for Switchyard"
- AR 00921560, "Chemistry Cold Weather Restoration Actions"
- Exelon Letter from F. A. Kearney, Site VP CPS to S.E. Kuczynski, Senior VP of Nuclear Operations "Certification of 2009 Summer Readiness," dated May 15, 2009

1R04 Equipment Alignment (71111.04)

- CPS 9069.03, "Shutdown Service Water Flow Path Verification," Revision 26
- CPS 3211.01V001, "Shutdown Service Water Valve Lineup," Revision 25f
- CPS 3211.01E001, "Shutdown Service Water Electrical Lineup," Revision 17d
- M05-1052, "P&ID Shutdown Service Water (SX)," Sheet 1, Revision AU
- M05-1052, "P&ID Shutdown Service Water (SX)," Sheet 4, Revision V
- CPS 3310.01V001, "Reactor Core Isolation Cooling Valve Lineup," Revision 12e
- CPS 3310.01E001, "Reactor Core Isolation Cooling Electrical Lineup," Revision 14b
- CPS 3310.01, "Reactor Core Isolation Cooling," Revision 27
- M05-1079, "P&ID Reactor Core Isolation Cooling," Sheet 1, Revision AH
- M05-1079, "P&ID Reactor Core Isolation Cooling," Sheet 2, Revision AJ
- CPS 3505.01E001, "Switchyard Electrical Lineup," Revision 10f
- CPS 3505.01V001, "Switchyard Valve Lineup," Revision 7e
- E02-1AP03, "Electrical Loading Diagram," Revision AA
- AR 00934821, "Relay System #1 Test Breaker Found In The Off Position"
- AR 00933974, "1MP04EC Main Power Transformer 1C Bank 3 Fan Relays Chattering"
- AR 00934836, "Individual (Non CPS) Did Not Adhere to CPS PPE Requirements"

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
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 8
- CPS 1893.04M351, "781 Control: Aux. Elect., Inverter & Battery Rooms Pre-fire Plan," Revision 6
- CPS 1893.04M523, "762 Diesel Generator: DG HVAC Equipment Area & Unit 2 Rooms Pre-fire Plan," Revision 4
- AR 00900952, "NRC Questions During Plant Walkdown"
- AR 00901580, "FP Concerns Raised By NRC Senior Resident"
- CPS 1893.04M400, "712' Fuel: Basement Prefire Plan," Revision 4
- CPS 1893.04M512, "737' Diesel Generator: Div. 2 Diesel Generator and Day Tank Room Prefire Plan," Revision 6
- CPS 1893.04M624, "737' Radwaste: Clean & Dirty Oil Storage Tank Room Prefire Plan," Revision 3a
- CPS 1893.04M702, "709' Turbine: Condensate Pump Room Prefire Plan," Revision 5a
- CC-AA-201, "Plant Barrier Control Program," Revision 6
- AR 00934367, "1CD030A: Questions Asked By NRC Resident From Plant Tour"

1R06 Flood Protection (71111.06)

- CPS 4304.01, "Flooding," Revision 4e
- CC-AA-103, "Configuration Change Control for Permanent Physical Plant Changes," Revision 19

- CC-AA-102, "Design Input and Configuration Change Impact Screening," Revision 17
- SL-4576, "Internal Flooding – Safe Shutdown Analysis and INPO SOER No. 85-5 Comparison Evaluation Report" (Sargent & Lundy), January 31, 1990
- 3C10-0485-001, "Internal Flooding Analysis," Revision 8, Volume A (Superseded)
- 3C10-0485-001, "Internal Flooding Analysis," Revision 8, Volume B
- 01ME077, "Calculations for Flooding – Safe Shutdown Analysis," Revision 4, Volume B
- FP-098, Supplement 1, "Install 3 Hour Fire Barrier in Auxiliary Building, Elevation 707' to Separate Safe Shutdown Method 1 Equipment from Safe Shutdown Method 2 Equipment"
- AR 904281, "NRC Concern on Flood Zones While Reviewing 4304.01"

1R07 Heat Sink Performance (71111.07)

- ER-AA-340-1002, "Service Water Heat Exchanger and Component Inspection Guide," Revision 3
- ER-AA-340, "GL 89-13 Program Implementing Procedure," Revision 5
- ER-AA-340-1001, "GL 89-13 Program Implementation Instructional Guide," Revision 6
- Work Order 00910588, "1E12B001B Heat Exchanger Inspection (GL 89-13 Program) – Verify Inspection Report of Heat Exchanger Is Complete"
- CPS 8222.02, "Residual Heat Removal Heat Exchanger Maintenance," Revision 11a
- CPS 8222.02C001, "Residual Heat Removal Heat Exchanger Maintenance Checklist," Revision 12
- EC 357995, "Safety-Related (Service Level III) Coatings for Heat Exchangers (Outside Containment)," Revision 0
- NRC Inspection Manual, Part 9900 Technical Guidance, "Maintenance – Filled Organic Coatings Used in Maintenance of Safety Related Equipment," October 11, 1994
- Work Order 00973668, "Install Safety Related Coatings Division 2 16-Cylinder Engine Heat Exchanger"
- Work Order 00973668, "Weld Metal Repairs to Division 2 16-Cylinder Engine Heat Exchanger Water Box"
- CPS 8170.12, "Metalclad Ceramalloy Protective Coatings," Revision 0d
- CPS 8170.12C001, "Metalclad Ceramalloy Protective Coatings Checklist," Revision 0c
- CPS 8130.01, "Heat Exchanger Maintenance/Repairs," Revision 1g

1R11 Licensed Operator Requalification Program (71111.11)

- HU-AA-1211, "Briefs," Revision 3
- SE-LOR-66, "Clinton Power Station Licensed Operator Training Simulator Exercise Guide," Revision 0
- TQ-AA-224-F080, "Training Observation Form," Revision 2
- TQ-AA-150-F06, "Simulator Evaluation Form," Revision 1
- TQ-JA-150-13, "Simulator Evaluation – Crew Competency Standards," Revision 0
- EP-AA-1003, "Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station," Revision 13

1R12 Maintenance Effectiveness (71111.12)

- ER-AA-310-1001, "Maintenance Rule – Scoping," Revision 3
- Maintenance Rule Expert Panel Meeting Minutes, December 11, 2008
- Maintenance Rule Scoping Document, "Area Radiation Monitoring and Process Radiation Monitoring Systems," October 20, 2008

- Maintenance Rule Reliability Data for Area Radiation Monitoring and Process Radiation Monitoring Systems, October 20, 2008
- AR 00854497, "NRC Question on AR/PR and Maintenance Rule"
- AR 00867170, "Add Radiation Monitoring Instrument List to EOP-9"
- AR 00867153, "EOP Revisions Not Reviewed for Maintenance Rule Impact"
- CPS 4406.01, "Emergency Operating Procedure EOP-9 - Radioactivity Release Control," Revision 28
- EP-AA-1003, "Exelon Nuclear Radiological Emergency Plan Annex for Clinton Station," Revision 13

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

- AR 00916128, "Future Planning Based On Inspection Of Governor Valve 1E51-F610"
- AR 00916734, "RCIC Outage Duration Adversely Impacted"
- AR 00916739, "No Schedule Activity To Restore Steam To The RCIC System"
- AR 00916815, "RCIC Tripped During Startup"
- Work Order 00948627, "Disassemble Clean and Inspect RCIC Governor Valve 1E51F610," May 4, 2009
- Prompt Investigation RCIC Turbine Trip IR 916815
- AR 00911834, "Elevated temperatures in Turbine Building Bioshield"
- ECR 391007, "Temporary Cooling to 800 Turbine Building"
- AR 00897064, "The Affect Leaking 1FW009B May Have On Other Plant Systems"
- AR 00911834, "Elevated Temperatures In Turbine Building Bioshield, Group 1"
- AR 00921131, " Turbine Floor Drain Pumps Indicate In-Leakage Step Change"
- AR 00921808, "1AP54E5BR Breaker For Area Coolers 1 WO02SG/K/M/N Found Tripped"
- AR 00925777, "1B21-F485 Has Packing Leak"
- AR 00925781, "Through Wall Leak On Elbow On 1TD03A"
- AR 00925997, "Steam Leak Repair Of 1FW029A Packing Leak Was Not Successful"
- AR 00928539, "Possible Steam Leaks"
- AR 00930677, "1WO02SJ: Air Handling Unit Fans Not Running"
- AR 00933479, "Actions from EC 375907 remove Group 1 Isolation TB temperature"

1R15 Operability Evaluations (71111.15)

- EC 374726, "Actuator Life Extension for MOV's 1HG009A/B from 2000 to 4000 Valve Stroke Cycles," Revision 0
- AR00519897, "Potential Air Leak on 1VQ002 on 1VQ005"
- AR 00721401, "Both Solenoids on 1VQ002 Parting Air"
- AR 00904125, "NRC ID'D – Question Concerning 1V002, Air leaks in C1R11"
- Clinton Power Station Updated Final Safety Analysis Report, Revision 11
- AR 00896120, "Unplanned Entry Into Radioactive Spill Off-Normal"
- AR 00912914, "RC&IS Channel Disagree Troubleshooting Results"
- AR 00924603, "1FC004A: FC [Spent Fuel Pool Cooling] Surge Tank High Level"
- AR 00932706, "NRC Identified That Upper Pool Level Safety Function Not Reviewed"
- EC 375822, "Review of Upper Pool Level for Suppression Pool Dum," Revision 0
- 01SM01, "Calculation of Minimum Water Levels Required in the 828'3" Containment Pools for Various Combinations of Gate Installations in the Pools," Revision 5
- M05-1069, "P&ID Suppression Pool Make-up," Revision 5

1R18 Plant Modifications (71111.18)

- EC 369611, "Address Concerns with location of Division 3 Diesel Generator Grounding Resistors," Revision 0
- Work Order 01116350, "Relocate Division 3 Ground Resistor in accordance with EC 369611"
- CC-AA-103, "Configuration Change Control for Permanent Physical Plant Changes," Revision 19
- EC 375901, "Install Auxiliary Fans on Turbine Building Main Steamline Area Coolers 1WO05SM & 1WO05SN1"
- EC 375573, "Install Temporary Mixing Fan in Turbine Building Heater Bay"
- ECR 390853, "Install temporary flexible HVAC ducting from 1WO02SY and 1WO02SC to the Heater Bay"
- Calculation #3C10-1182-002, "Temperature Transient In The Main Steam Tunnel Due To Steam Leakage"
- Design Analysis (Minor Revision) 3C10-1182-002, "Temperature Transient In The Main Steam Tunnel Due To Steam Leakage" Revision 000-A
- ACMP #09-009, "1FW009B HP Heater 6B MOV Steam Leak Monitoring Plan"
- ACMP, "Elevated Temperatures in the Turbine Building Bioshield," April 26, 2009
- Temporary Configuration Change Procedure (TCCP) 375671, "Temporary 480V AC Power to Area Coolers in the Turbine Building EL 737"
- AR 00913148, "Packing Leak Found On 1FW029A"
- AR 00924944, "Operational and Technical Decision Maker Requested For Steam Leak On 1FW009B"
- CC-AA-112, "Temporary Configuration Changes," Revision 12

1R19 Post-Maintenance Testing (71111.19)

- WO 460947, "Perform MOV Thrust Verification and Clean/Inspect 1E21F011"
- WO 1027954, "1SX032 Would Not Isolate SX Flow When Closed (Repair/Replace)"
- MA-AA-716-012, "Post-Maintenance Testing," Revision 11
- AR 00751548, "1FIWS121: WS Pump 'A' Seal Water Pressure Indicates Low"
- AR 00823563, "1WS01PA Emitting A Loud Noise"
- AR 00926372, "1DI-WS121 Flow Low During Pump Start"
- AR 00927258, "NOS ID Evaluation Of WS Pump High Amps Not Done"
- AR 00927914, "Station Personnel Are Not Identifying Inadequate Procedure Guidance"
- AR 00928644, "WS Strainer 'A' Drain Piping Vibrates/1WS048A Not Full Shut"
- Work Order 01171738-07, "OP PMT of 1WS01PA Pump and Motor," June 1, 2009
- Work Order 01116064, "1PI-WS063 WS Pump 'A' Seal Water Pressure Indicates Low," March 19, 2008
- CPS 3212.01, "Plant Service Water (WS)," Revision 29b
- AR 00937183, "Fire Pump 'A' High Temperature During PMT Run"
- AR 00937326, "Temperature Bath Leak (Glycol) During Pre-calibration Activity"
- Work Order 01240049, "9071.01A21 Fire Pump A Operability Run" June 30, 2009
- CPS 9071.01, "Diesel Driven Fire Pumps Operability Test," Revision 36
- Work Order 01229068, "9067.01B20 Standby Gas Treatment Train 'B' Flow/Heater Operability," May 13, 2009
- CPS 9069.01, "Shutdown Service Water System Operability Test," Revision 46a
- CPS 9067.01, "Standby Gas Treatment System Train Flow/Heater Operability" Revision 31a
- CPS 9054.02, "Reactor Core Isolation Cooling Valve Operability Checks," Revision 36e
- CPS 9054.02D001, "RCIC Valve Operability Data Sheet," Revision 39b

1R22 Surveillance Testing (71111.22)

- CPS 9000.01D001, "Control Room Surveillance Log – Mode 1, 2, 3 Data Sheet," Revision 52a
- CPS 8801.15, "LPRM/APRM Display Meter/Calibration Card Calibration for APRM A, B, C, D," Revision 38c
- CPS 9431.64, "Average Power Range Monitor (APRM) Channel Calibration 6 Month," Revision 1e
- CPS 9431.64C004, "APRM Channel D Calibration Checklist," Revision 0d
- CPS 9431.64D005, "APRM Channel Calibration Data Sheet," Revision 0b
- CPS 9071.14, "Fire Protection Diesel Generator Bay 1C CO2 System Auto Actuation Test," Revision 1d
- AR 00913279, "Unexpected System Response During 9071.14"
- AR 00908295, "NRC Identified No Lake Level Gage Markings Below Elevation 693"
- AR 00823311, "No Lake Level Gage Markings Below 693' Elevation"
- AR 00911283, "9069.01 IST Surveillance Performed With Instrument Not Approved"
- CPS 9437.05, "Remote Shutdown RCIC System Flow E51-N003 Channel Calibration," Revision 36d
- CPS 9437.05D001, "Remote Shutdown RCIC Flow E51-N003 Channel Calibration Data Sheet," Revision 36d
- Work Order 01233182 "IM Fill & Vent Transmitters: 1E51N003 & 1E51N051," May 8, 2009

2OS1 Access Control to Radiologically Significant Areas (71121.01)

- AR 745220, "Nuclear Oversight Identified: Fuel Pool Cleanup ALARA Plan Not Fully Implemented"
- AR745079, "Nuclear Oversight Identified: Fuel Pool ALARA Plan Was Not Approved"
- AR 745201, "Nuclear Oversight Identified: Individuals Not Listed On ALARA Briefing Sheet"
- AR 745807, "C1R11 Shoot-Out Steel Removed Too Early"
- AR751206, "Area Not Properly Recovered From C1R11 Activities"
- AR 761747, "Work Order 866653 Stopped Due To Inadequate Preparation"
- AR 780974, "Radwaste Shipping Bay Unable To Be Deposted From Locked High Radiation Area"
- AR 798213, "Locked High Radiation Area Controls Enhancement to 800 Turbine Building Bioshield"
- AR 830971, "Potential Trend in Radiation Protection Planning"
- AR884273, "Discrete Radioactive Particle Found On PCS Phone"
- AR 887711, "High Dose Rates on Drywell RT Piping Being Replaced During C1R12"
- AR 891711, "Radworker Computer Based Training Does not meet Current Requirements"
- AR 904924, "Water Migrates From Sealand to Concrete Pad During Inspection"
- ASSA 699078-10, "Focused Area Self-Assessment Report: Access Control to Radiologically Restricted Areas"
- NF-AA-690, "Spent Fuel Pool Material Control," Revision 2
- RP-AA-220, "Bioassay Program," Revision 5
- RP-AA-221, "Whole Body Count Data Review," Revision 1
- RP-AA-376, "Radiological Postings, Labeling and Markings," Revision 4
- RP-AA-401, "Attachment 9; Micro ALARA Plan: Leak on 1G33-F602-B Fitting Component Cooling Water to Pump Seal," April 21, 2009
- RP-AA-460, "Controls for High and Locked High Radiation Areas," Revision 18
- RWP 10009957, "2009 Housekeeping/Decontamination Generic," Revision 0
- RWP 10009961, "2009 Vendor Processing or Radwaste," Revision 0

- RWP 10009968, "2009 FIN Team High Radiation Area/Locked High Radiation Area," Revision 0
- RWP 10009969, "2009 Reactor Core Isolation Cooling System Outage Window," Revision 0

40A1 Performance Indicator Verification (71151)

- Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5

40A2 Identification and Resolution of Problems (71152)

- LS-AA-125, "Corrective Action Program (CAP) Procedure," Revision 11
- AR 00766213, "Missed Operational Requirements Manual Surveillance in C1R11"
- CPS 9061.11, "Instrument Air Check Valve Operability and Pipe Pressure Test," Revision 41c
- Letter from R. Gibbs, (U.S. NRC), to C. Pardee (Exelon Generation Company, LLC), Subject: Clinton Power Station, Unit No. 1 – Proposed Alternative Relief Request to Performance of System Pressure Test on Instrument Air Piping, Second Ten-Year Interval Inservice Inspection Interval (TAC NO. MD4896), December 13, 2007
- ER-AA-600-1045, "Risk Assessments of Missed or Deficient Surveillances," Revision 2
- ER-AA-600-1012, "Risk Management Documentation," Revision 8
- SA-1658, "Risk Analysis for Missed Surveillance, Pressure Drop Test for the Air Accumulator System for 1B21F032A and B," Revision 0
- Clinton Power Station Technical Specifications
- Clinton Power Station Updated Final Safety Analysis Report, Chapter 15, "Accident Analyses," Revision 11
- Clinton Power Station Updated Final Safety Analysis Report, Section 5.4.7.1.1.6, "Feedwater Leakage Control Mode (FWLC)," Revision 11
- AR 00895088, "NRC Question on Missed Surveillance Tracking"
- AR 00901776, "NRC Questions on Risk Evaluation for Missed Surveillance"
- AR 00903527, "Forced Outage – Perform 9061.11, 8.16 (B21F33A/B)"
- AR 00785696, "IST Surveillance Discrepancies"
- AR 00882670, "1E12F025B: IST Relief Valve Test Past Due"
- AR 00846540, "IST Surveillance Discrepancies for Excess Flow Check Valves"
- AR 00904095, "IST Surveillance for 1SX001C Doesn't Meet Relief Request 2202"
- CL-SURV-03, "Risk Analysis for Missed Surveillance, Failure to Test Various Excess Flow Check Valves Used for Containment Isolation," Revision 0
- CL-SURV-05, "Risk Analysis for Missed Surveillance Check Valve 1SX001C Not Subjected to Full Division 3 SX Flow During Testing," Revision 0
- CL-SURV-07, "Evaluation of Aggregate Risk of Simultaneous Missed Surveillances for Five Sets of Valves," Revision 1
- NRC Generic Letter 87-09, "Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirements," June 4, 1987
- Memorandum from J. Clifford, (U.S. NRC), to T. Blount (U.S. NRC), Subject: Task Interface Agreement (TIA) – Evaluation of Application of Technical Specification (TS) 4.0.3, "Surveillance Requirement Applicability," at Pilgrim (TIA 2008-004), December 31, 2008
- LS-AA-125-1005, "Coding and Analysis Manual," Revision 5
- HU-AA-104-101, "Procedure Use and Adherence," Revision 3
- Common Cause Evaluation (AR 00913391), "CCA for Clinton Chiller Problems," April 29, 2009
- Prompt Investigation "Entered Abnormal Reactor Flow Off Normal," IR 934528
- Adverse Condition Monitoring Plan (ACMP) Off-Gas Flow

- AR 00933783, "ACMP Threshold Reached (Off-Gas Flow)"
- Apparent Cause Evaluation Report, "Unidentified Leak in Turbine Building Results in Tritium Detection" (AR 00862428)
- Apparent Cause Evaluation Report, "1SX063A Valve Operator Removed With Danger Tag On Handwheel" (AR 00824278)
- Prompt Investigation "WT Sample Line Open For Extended Time," IR 932929
- AR 00925144, "Adverse Hotwell Level Trend Following CD System Operations"

4OA7 Licensee-Identified Violations

- AR 567081, "Paperwork Review Revealed need to Verify Waste Characterization"
- AR 917109, "NRC Debriefed Violation of 2005 Shipping Discrepancy"

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agency-wide Documents and Management System
ANSI	American National Standards Institute
APRM	Average Power Range Monitor
ASME	American Society of Mechanical Engineers
AR	Action Request
BI	Barrier Integrity
C1R11	Unit 1 Refueling Cycle 11
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CEDE	Committed Effective Dose Equivalent
CPS	Clinton Power Station
EC	Engineering Change
ECR	Engineering Change Request
FIN	Finding
IE	Initiating Events
IMC	Inspection Manual Chapter
IST	Inservice Testing
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MS	Mitigating Systems
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PI	Performance Indicators
RCS	Reactor Coolant System
RC&IS	Rod Control & Information System
RCIC	Reactor Core Isolation Cooling
RETS	Radiological Effluent Technical Specifications
RWP	Radiation Work Permits
SDP	Significance Determination Process
SSCs	Systems, Structures, and Components
SX	Shutdown Service Water
TIA	Task Interface Agreement
TS	Technical Specification
TSO	Transmission System Operator
TSSR	Technical "Specification Surveillance Requirement
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
USGS	U.S. Geologic Survey
VG	Standby Gas Treatment
WO	Work Order
WR	Work Request