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

August 7, 2009

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: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
INTEGRATED INSPECTION REPORT 05000237/2009-003;
05000249/2009-003

Dear Mr. Pardee:

On June 30, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. The enclosed report documents the inspection results, which were discussed on July 15, 2009, with Mr. T. Hanley and other members of your staff.

The 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.

The report documents one NRC-identified finding and one self-revealed finding of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings 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; 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352, the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Dresden. 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 Dresden. 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, 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 Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA J. Benjamin, Acting For/

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

Docket Nos. 50-237; 50-249
License Nos. DPR-19; DPR-25

Enclosure: Inspection Report 05000237/2009-003; 05000249/2009-003
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Dresden Nuclear Power Station
Plant Manager - Dresden Nuclear Power Station
Manager Regulatory Assurance – Dresden Nuclear 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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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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Letter to C. Pardee from M. Ring dated August 7, 2009

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
INTEGRATED INSPECTION REPORT 05000237/2009-003;
05000249/2009-003

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REGION III

Docket Nos:	50-237; 50-249
License Nos:	DPR-19; DPR-25
Report No:	05000237/2009-003; 05000249/2009-003
Licensee:	Exelon Generation Company
Facility:	Dresden Nuclear Power Station, Units 2 and 3
Location:	Morris, IL
Dates:	April 1 through June 30, 2009
Inspectors:	C. Phillips, Senior Resident Inspector D. Meléndez-Colón, Resident Inspector S. Edmonds, Reactor Engineer J. Draper, Reactor Engineer J. Benjamin, Project Engineer W. Slawinski, Senior Health Physicist T. Go, Health Physicist M. Bielby, Senior Operations Engineer
Approved by:	M. Ring, Chief Projects Branch 1 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000237/2009-003, 05000249/2009-003; 04/01/2009 - 06/30/2009; Dresden Nuclear Power Station, Units 2 & 3, Operability Evaluations and Event Follow-Up.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. Both of the findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects were determined using IMC 0305, "Operating Reactor Assessment Program." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. A finding of very low safety significance and associated Non-Cited Violation of Technical Specification Section 5.4.1 was self-revealed when the Unit 2 instrument air system had a significant pressure drop because a non-licensed operator failed to follow procedure DOP 4700-01, "Instrument Air System Startup," Revision 46. The violation was placed into the licensee's corrective action program (CAP) in Issue Reports 911794 and 893376. The non-licensed operator was relieved from duty. Both the non-licensed operator and the unit supervisor were counseled for the failure to perform expected work practices. The licensee also found that this event was similar to other problems discussed in the licensee's Root Cause Report 893376, "Operations Cyclic Performance." Multiple corrective actions were assigned in Root Cause Report 893376 to address a lack of operations supervision enforcing department standards.

  Using the guidance contained in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," dated December 4, 2008, the inspectors determined that the finding was more than minor because the finding could be reasonably viewed as a precursor to a significant event. Specifically, the failure to follow procedure resulted in an instrument air (IA) transient that could have resulted in a unit scram if the IA system had not been recovered in a timely manner. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a, for the Initiating Event Cornerstone. The inspectors determined that the finding represented an increase in the likelihood of a reactor trip and the likelihood that mitigation equipment would be unavailable because the finding increased the likelihood of a loss of instrument air (LOIA) event. Therefore, the finding required a phase 2 SDP evaluation. The duration of the condition was less than three days. Using the SDP usage rules from IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations", the inspectors increased the initiating event frequency for the LOIA event by one order of magnitude for the three day exposure period. The result was an estimated change in core damage frequency of less than 1.0E-6/yr. As a result, the finding was determined to be of very low safety significance (Green) based on the phase 2 SDP evaluation. This finding had

a cross-cutting aspect in the area of Human Performance, Work Practices because the operator did not use the expected human performance techniques.
H.4.(a) (Section 4OA3)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding of very low safety significance involving a Non-Cited Violation of Technical Specification 5.4.1 for the failure to include essential information in procedures CY-AB-120-310, "Suppression Pool/Torus Chemistry," and CY-DR-120-31, "Suppression Pool/Torus Chemistry," to ensure torus pH values were above 5.6 in support of the radiological consequence dose analyses as described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." As corrective actions, the licensee changed procedures CY-AB-120-310 and CY-DR-120-31 to include essential information for sampling the torus and revised the methodology for calculating torus pH.

  Using IMC 0612, Appendix E, "Examples of Minor Issues," issued on September 20, 2007, and Appendix B, "Issue Screening," issued on December 4, 2008, the inspectors determined that this finding was more than minor because there was reasonable doubt on the operability of the standby liquid control system and its ability to maintain torus pH above 7 following a loss of coolant accident and because of significant programmatic deficiencies in the licensee's corrective action program. The inspectors also determined that this finding impacted the Barrier Integrity objective to provide reasonable assurance that physical design barriers (i.e., containment) protect the public from radionuclide releases caused by accidents or events. The failure to maintain adequate procedures addressing torus pH sampling resulted in a condition where there was reasonable doubt of the operability of the standby liquid control system. The inspectors completed a Phase 1 significance determination on this issue using IMC 0609, "Significance Determination Process," Attachment 4, Table 4a, dated January 10, 2008. The inspectors determined that this finding only represented a degradation of a radiological barrier function and therefore screened as Green. This finding was related to the cross-cutting issue of problem identification and resolution (corrective action program) because the licensee did not take appropriate corrective actions to address safety issues in a timely manner. P.1(d) (Section 1R15)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

Unit 2

On April 26, 2009, power was reduced to approximately 90 percent to perform control rod drive (CRD) troubleshooting and maintenance. The unit returned to full power on the same day.

On May 31, 2009, power was reduced to approximately 77 percent to perform turbine valve testing, CRD scram time testing, and a CRD pattern adjustment. The unit returned to full power on the same day.

On June 23, 2009, power was reduce to approximately 96 percent due to cooling issues with the main power transformer, and the unit returned to full power the same day.

Unit 3

On April 12, 2009, power was reduced to approximately 77 percent to perform a repair on the LVDT of turbine control valve #3. The unit returned to full power on the same day.

On April 23, 2009, the unit was taken off-line for a maintenance outage to replace a leaking primary relief valve. The unit returned to full power on April 27, 2009.

On May 3, 2009, power was reduced to approximately 70 percent to perform turbine valve testing, CRD scram time testing, and a CRD pattern adjustment. The unit returned to full power on May 4, 2009.

1. REACTOR SAFETY

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the 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. Examples of aspects considered in the inspectors' review included:

- The coordination between the TSO and the plant during off-normal or emergency events;
- The explanations for the events;
- The estimates of when the offsite power system would be returned to a normal state; and
- The notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- The actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would 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 would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- A re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- The 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 was challenged.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of the licensee's preparations for summer weather for selected systems, including conditions that could lead to an extended drought.

During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- auxiliary electric equipment room heating, ventilation and air conditioning; and
- Unit 2/3 emergency diesel generator cooling water.

This inspection constituted one seasonal adverse weather sample as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

.3 Readiness For Impending Adverse Weather Condition – High Wind Conditions

a. Inspection Scope

Because high winds are common to the Midwest in the spring, the inspectors reviewed the licensee's overall preparations for the expected weather conditions. The inspectors walked down important outdoors areas within the protected area, in addition to the licensee's emergency AC power systems, because safety-related functions could be affected by, or required as a result of, high winds or tornado-generated missiles. The inspectors focused on the licensee's procedures used to respond to specified adverse weather conditions and toured the plant grounds for loose debris, which could become missiles during a tornado or high winds condition. The inspectors also verified that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into its corrective action program in accordance with station procedures.

This inspection constituted one sample prior to the onset of an adverse weather condition.

This inspection constituted one readiness for impending adverse weather condition sample as defined in IP 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- U3 and U2 emergency diesel generator (EDG)- 2/3 EDG out-of-service;
- 2A standby liquid control (SBLC) – 2B SBLC out-of-service; and
- 2A core spray subsystem return-to-service.

The inspectors selected these systems based on their risk-significance relative to the Reactor Safety Cornerstones. The inspectors attempted to identify any discrepancies that could impact the function of the system, and therefore potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, Technical Specification (TS) requirements, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to

identify conditions that could have rendered the system incapable of performing its intended functions. The inspectors also walked down accessible portions of the system to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On April 6, 2009, the inspectors performed a complete system alignment inspection of the Unit 3 high pressure coolant injection system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

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

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

- Fire Zone 8.2.5D, elevation 517', Unit 3 low pressure heater pumps;
- Fire Zone 8.2.5E, elevation 517', Unit 3 high pressure heaters bay;
- Fire Zone 1.3.1, elevation 517', Unit 3 shutdown cooling pump room; and
- Fire Zone 1.1.2.5.A, elevation 589', Unit 2 isolation condenser area.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire protection plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of the 2B and the 3B low pressure coolant injection system heat exchangers to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in

risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. Documents reviewed for this inspection are listed in the Attachment to this report.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q & A)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On April 29, 2009, and again on May 13, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly licensed operator requalification program samples as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

.2 Annual Operating Test Results and Biennial Written Examination Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the individual biennial written examinations, Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from April 22 through May 29, 2009, as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." The documents reviewed during this inspection are listed in the Attachment to this report.

This inspection constituted one annual inspection sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Unit 3 reactor recirculation system; and
- Unit 2/3 emergency diesel generator.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

Failure of 2/3 Emergency Diesel Generator (EDG) Due to Lube Oil Leak On Y-Strainer

Introduction: On June 2, 2009, during the performance of the monthly operability test on the 2/3 EDG an oil leak of about ½ gpm on the turbo lube oil Y-strainer was identified and the 2/3 EDG was shutdown.

Description: The June 2, 2009, leak on the lube oil Y-strainer made the 2/3 EDG inoperable. A plastic foreign material exclusion (FME) plug was found in the top of the Y-strainer where the oil was leaking. A brass plug should have been inserted where the plastic plug was installed. The Y-strainer had been replaced in March 2008. The licensee was performing a root-cause evaluation to determine when and how the plastic plug got into the strainer. The licensee planned to complete the root-cause evaluation in July 2009. When and how the plastic FME plug was inserted into the strainer and why it was not removed before installation in March 2008 is an unresolved item. **(URI 05000237/2009003-01; 05000249/2009003-01)**.

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 the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Unit 3 yellow risk during DIS 1500-32;
- Unit 3, Division I torus cooling isolation valve 3-1501-20A;
- 2B standby liquid control out-of-service;
- Unit 2 switchyard current transformer installation; and
- Bus 4 out-of-service with 2/3 emergency diesel generator inoperable.

These activities were selected based on their potential risk-significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These activities constituted five samples as defined in IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- IR 893211, "While Placing C/O 71240, MOV [motor operated valve] 2-2301-6 did not fully close;"
- IR 899954, "Thermal Overload Calculation for MOVs Is Non-Conservative;"
- IR 905885, "Leak at Union 3A CS [core spray] Pump Motor Bearing Cooler Inlet Line;"
- IR 907890, "Blown Fuse Found During Performance of PM [preventative maintenance];"
- IR 910919, "IR Not Written to Document Invalid Torus pH (Low);" and
- IR 923691, "Fuse 3-0595-719, Drywell & Torus Vent and Purge Blown."

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes six samples as defined in IP 71111.15-05.

b. Findings

Failure to Have a Procedure to Sample and Establish Administrative Controls for pH in the Torus

Introduction: The inspectors identified a Green finding involving a Non-Cited Violation of Technical Specification 5.4 for the failure to include essential information in procedures CY-AB-120-310, "Suppression Pool/Torus Chemistry," and CY-DR-120-31, "Suppression Pool/Torus Chemistry," regarding sampling the torus for pH and actions and/or contingencies to perform in case pH values were below 5.6 in support of the radiological consequence dose analyses as described in Regulatory Guide (RG) 1.183,

"Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors."

Description: Per the Dresden UFSAR and Dresden Technical Specification Bases B 3.1.7, "Standby Liquid Control System," the standby liquid control (SBLC) system fulfills two safety-related objectives. First, it provides an additional and independent means of reactivity control. Second, in the event of a design basis loss of coolant accident (LOCA), the contents of the SBLC system tanks are injected into the torus to maintain the pH of the torus at a value greater than 7. This ensures that the particulate iodine deposited into the torus during a design basis LOCA does not become airborne. The inspectors wanted to understand how this second safety-related objective was met.

On September 11, 2006, the licensee adopted the alternative source term methodology as prescribed in Title 10 to the Code of Federal Regulations (CFR) Section 50.67, "Accident Source Term." This regulation provides a mechanism for power reactor licensees to replace the traditional accident source term used in design-basis accident (DBA) analyses with an alternate source term (AST). In support of a full-scope implementation of AST as described in RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," the licensee performed AST radiological consequences analyses for the four DBAs that result in offsite exposure. An evaluation of torus pH to ensure that the particulate iodine deposited into the torus during a DBA LOCA does not re-evolve and become airborne as elemental iodine was one of the steps in this analysis.

In September 2008, the inspectors reviewed the calculation results which demonstrated that the buffering effect of the boron solution in the SBLC system maintains the torus pH above 7 for the 30-day duration of the postulated LOCA assuming the minimum initial pH (pH_0) of the torus water was 5.6. Maintaining torus pH at or above 7, as an assumption in support of the radiological consequence analysis, was a change to the design and licensing bases. On September 15, 2008, the inspectors questioned the licensee with regard to which procedure required sampling of the torus for pH to ensure pH values were above 5.6 in support of the regulatory requirements upon which the NRC staff based its acceptance of the radiological consequence dose analyses.

According to Exelon corporate procedure CY-AB-120-310, "Suppression Pool/Torus Chemistry," Revision 2, there was no pH-sampling requirement for Dresden Station, and therefore, there was no pH specification in place. However, samples were pulled for trending purposes, and not specifically to validate that the pH was greater than 5.6. Since there was no pH specification listed, there were no administrative controls in place to flag data in the event the torus water was below a pH of 5.6.

The inspectors reviewed torus pH trend results for both units from January 1995 through September 2008. The inspectors did not find any instance with a pH value below 5.6. Therefore, the inspectors considered this issue as minor. The licensee generated Issue Report (IR) 818271 to address this issue.

In April 2009, the inspectors once again reviewed torus pH trend results for both units from January 2008 through April 2009. The inspectors identified one instance, on November 20, 2008, where the pH value for the Unit 3 torus was below 5.6 (5.110). The inspectors questioned the licensee about this sample since no issue report was

generated and no verification sample was taken. The next pH sample was taken on December 4, 2008, two weeks later. The result of the pH sample value on December 4, 2008 was above 5.6. In addition, the inspectors questioned the operability of the SBLC system due to the system's potential failure to fulfill the safety-related function to maintain torus pH above 7 following a loss of coolant accident involving a significant fission product release.

Further investigation determined that the corporate procedure for sampling the torus, CY-AB-120-310, was not revised until January 7, 2009. In the interim, Dresden Station procedure CY-DR-120-310, "Suppression Pool/Torus Chemistry," was revised to require sampling of the torus for pH. This revised procedure was not in place until November 20, 2008, the same day the suspect sample was taken and two months after the original issue was raised by the inspectors. Therefore, the procedure utilized by chemistry department personnel on November 20, 2008, did not require sampling the torus for pH and did not include guidance on what actions to perform if pH values were below 5.6. No compensatory actions or guidance were in place from September 15, 2008, (when the original issue was raised by the inspectors) through November 20, 2008.

The chemistry department management personnel explained to the inspectors that the suspect pH value was inaccurate due to the low conductivity of the sample and therefore the data was deemed bad. The inspectors pointed out to the licensee the fact that other samples with even lower conductivity values showed acceptable pH values, above 5.6. The licensee also explained to the inspectors that low laboratory temperatures that day (November 20, 2008) could have affected the pH sample results and therefore the pH value was not reliable. The inspectors noticed that the chemistry laboratory was in fact having problems with the heating system (calls were made from November 18, 2008, through December 31, 2008, requesting repair of the heating system) but no other pH samples seemed to be affected by the cold temperatures. No IR was written to document the bad data point and the problems with measuring pH with very low torus water conductivity and low ambient temperatures. In the meantime the inspector's question regarding SBLC system operability was still without an answer and there was reasonable doubt on the operability of the system. In addition, the licensee informed the inspectors that a verification sample was not taken because the pumps for the low pressure coolant injection (LPCI) system needed to be running in order to be able to collect a sample and that the next opportunity to collect a sample was on December 4, 2008. The inspectors searched the Operations Logs from November 20, 2008, through December 4, 2008, and identified that the LPCI system pumps were running in at least 3 different instances during this period of time. Later discussions with the licensee identified the pumps were not required to be running in order to draw a sample.

Analysis: The inspectors determined that the licensee's failure to include essential information in CY-AB-120-310 and CY-DR-120-310 regarding sampling the torus for pH and actions and/or contingencies to perform in case pH values were below 5.6 to support the radiological consequence dose analyses as described in RG 1.183 was a performance deficiency warranting a significance evaluation. As described in IMC 0612, Appendix E, "Examples of Minor Issues," issued on September 20, 2007, examples 3.j and 3.k, a finding or performance deficiency can be more than minor if there is reasonable doubt on the operability of a system or component or if significant programmatic deficiencies are identified with the issue that could lead to worse errors if

uncorrected. As described above, under the Description section, the inspectors had reasonable doubt on the operability of the SBLC system and its ability to maintain the pH of the torus at a value greater than 7 in the event of a DBA LOCA. This was due to the licensee's delay in providing the inspectors with a sound explanation on why the data for the sample taken on November 20, 2008, was deemed bad. In addition, the inspectors determined that the fact that this issue was raised previously on September 14, 2008, and no compensatory actions were in place or no guidance provided to the technicians collecting the samples from September through November 20, 2008, nor any confirmatory sample taken until two weeks later, demonstrated a significant programmatic deficiency in the licensee's corrective action program.

The inspectors also reviewed the guidance on IMC 0612, Appendix B, "Issue Screening," issued on December 4, 2008, and determined that this finding impacted the Barrier Integrity objective to provide reasonable assurance that physical design barriers (i.e., containment) protect the public from radionuclide releases caused by accidents or events. The failure to maintain adequate procedures to ensure torus pH values were above 5.6 in support of the radiological consequence dose analyses as described in RG 1.183, resulted in a condition where there was reasonable doubt on the operability of the SBLC system due to the system's potential failure to fulfill the safety-related function to maintain torus pH above 7 following a loss of coolant accident involving a significant fission product release. Therefore, the inspectors concluded that this finding was more than minor. This finding was related to the cross-cutting issue of problem identification and resolution (corrective action program) because the licensee did not take appropriate corrective actions to address safety issues in a timely manner. P.1(d)

The inspectors completed a Phase 1 significance determination on this issue using IMC 0609, "Significance Determination Process," Attachment 4, Table 4a, dated January 10, 2008. The inspectors determined that this finding only represented a degradation of a radiological barrier function and therefore screened as Green (very low safety significance).

Enforcement: The inspectors determined that the licensee's failure to include essential information in CY-AB-120-310 and CY-DR-120-310 regarding sampling the torus for pH and actions and/or contingencies to perform in case pH values were below 5.6 to support the radiological consequence dose analyses as described in RG 1.183 was a violation of Dresden Technical Specification Section 5.4, "Procedures." Section 5.4 states, in part, that written procedures shall be established, implemented, and maintained covering applicable procedures recommended in RG 1.33, Revision 2, Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," issued on February 1978. Section 10, "Chemical and Radiochemical Control Procedures," of RG 1.33 states, in part, that chemical and radiochemical control procedures should be written to prescribe the nature and frequency of sampling and analyses, and the instructions for maintaining water quality within prescribed limits.

In addition, and as described in the Exelon Quality Assurance Manual, the licensee committed to follow the requirements of American National Standard (ANS) 3.2, "Administrative Control and Quality Assurance for the Operational Phase of Nuclear Power Plants." This standard requires chemistry specifications, control limits and methods of control to be established for fluid systems consistent with system operational and safety requirements.

Contrary to the above, on November 20, 2008, the licensee failed to include essential information in CY-AB-120-310 and CY-DR-120-310 regarding sampling the torus for pH and actions and/or contingencies to perform in case pH values were below 5.6. The failure to maintain adequate procedures addressing torus pH sampling resulted in a condition where there was reasonable doubt of the operability of the SBLC system due to the system's potential failure to fulfill the safety-related function to maintain torus pH above 7 following a loss of coolant accident involving a significant fission product release. This issue was entered into the licensee's corrective action program as IR 910919. Corrective actions taken by the licensee included the revision of the methodology for calculating torus water pH and the theoretical re-calculation of pH for the sample taken on November 20, 2008, to demonstrate it was above the 5.6 limit. In addition, the licensee plans to revise the AST radiological consequence analysis and improve the pH sampling method for samples with low conductivity. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000249/2009003-02)**.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- EC 374824, "Temporarily Install Blind Flanges on CCSW [containment cooling service water] Room Cooling Coil 2-5700-30C piping To Keep CCSW Room Cooling Coil 2-5700-300 Operable."

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of any system(s). The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that the operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance.

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

b. Findings

No findings of significance were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The following issue report was reviewed and selected aspects were discussed with engineering personnel:

- WO 1230547, “Off-gas alarm setpoint not in compliance with TS Appendix B.”

This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. The modification changed the alarm set point for the off-gas radiation monitor. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- WO 0565281, “D2/3 6Y PM [preventative maintenance] Standby Diesel Generator Inspection;”
- WO 01075310-01, “2B SBLC Pump Seal Leaks;”
- WO 01004810-01, “D3 2RFL TS IST [in-service test] RV – Replace C Electromatic RV;”
- WO 729995-01, “D3 15Y B LPCI [low pressure coolant injection] Heat Exchanger DP [differential pressure] Controller;” and
- WO 1237395-01, 05 & 06, “ALDW [actuator leak dry well] Floor Drain Sump AOV 3-2001-105 actuator Diaphragm Leak.”

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test

documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes five samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities for a Unit 3 maintenance outage that began on April 23, 2009 and continued through April 27, 2009. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed or reviewed the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, control and monitoring of decay heat removal, control of containment activities, startup and heatup activities, and identification and resolution of problems associated with the outage. The purpose for the maintenance outage was to replace a leaking primary relief valve. The 3C electromatic relief valve was leaking by its seat which was impacting torus level and temperature.

This inspection constituted one other outage sample as defined in IP 71111.20-05.

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 activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- WO 01035145-01, “D3 24M TS CS [core spray] Pump Comp Test With Torus Availability for IST [in-service testing] Surveillance;”

- DOP 2000-24, “Drywell Sump Operation,” Revision 19 (RCS);
- DTP 09, “Leak Detection and Reduction Program,” Revision 10;
- WO 1022626, “D2 24M TS D/G Test/Endur & Margin/Full load Rejects;”
- WO 1009757, “D3 24M TS Div 1 & 2 LPCI [low pressure coolant injection] ECCS [emergency core cooling system] Loop Select Circuitry LSFT [logic system functional test];”
- WO 1236657, “Op D1 Annual Test Diesel Fire Pump Flow Capacity Test;” and
- WO 01088317-01, “18M TS Bus 34-1 Degraded Voltage Relay Calibration.”

The inspectors observed in plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criterion clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequencies were in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted seven surveillance testing samples, one inservice testing sample, one RCS leakage detection sample, and five routine samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on May 13, 2009, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2PS1 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 71121.01-5.

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 in the following radiologically significant work areas 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:

- Unit 2/3 Reactor Buildings (various areas) including the refueling floor;
- Radwaste Building (various high and locked high radiation areas); and
- Waste Concentrator 'B' Vault in the Radwaste Upgrade Building.

This inspection constitutes one sample as defined in IP 71121.01-5.

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 71121.01-5.

The inspectors walked down and surveyed (using an NRC survey meter) these areas and selected areas of the Turbine Building 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 for the waste concentrator vault cleanup.

This inspection constitutes one sample as defined in IP 71121.01-5.

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. This review was limited to the waste concentrator vault room since that was the only work area during the inspection with the potential for airborne radioactivity.

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 71121.01-5.

The inspectors assessed the adequacy of the licensee's process for internal dose assessment resulting from intakes. No internal exposures in excess of 50 millirem committed effective dose equivalent occurred since previously reviewed by the inspectors in November 2008. Nevertheless, the inspectors reviewed the internal dose

assessment results and associated calculations for any workers that had potential intakes between November 2008 and April 2009.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within the spent fuel pools or other storage pools.

This inspection constitutes one sample as defined in IP 71121.01-5.

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 (LERs), 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 71121.01-5.

The inspectors reviewed corrective action reports related to access controls and any high radiation area radiological incidents (issues that did not count as performance indicator (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 71121.01-5.

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 71121.01-5.

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. None of these events occurred during the inspection period.

This inspection constitutes one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following 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:

- Radwaste Concentrator Vault Cleanup/Sludge Removal Activities; and
- Dry Cask Preparations Following Cask Loading on the Refuel Floor.

The inspectors reviewed radiological job requirements for these activities, including RWP requirements and work procedure requirements, and attended the pre-job briefing for the radwaste concentrator vault work.

This inspection constitutes one sample as defined in IP 71121.01-5.

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 71121.01-5.

The inspectors reviewed radiological work previously conducted 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.

This inspection constitutes one sample as defined in IP 71121.01-5.

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 and supervisors 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 71121.01-5.

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 locked high radiation areas during certain plant operations and for other areas with the potential for transient elevated radiation levels resulting from operational surveillances or radwaste system operations. The inspectors assessed if these plant operations required communication beforehand with the radiation protection group, so as to allow corresponding timely actions to properly identify, post and control the radiation hazards.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors conducted plant walkdowns to assess the adequacy of the posting, locking and barrier quality of numerous high and locked high radiation areas.

This inspection constitutes one sample as defined in IP 71121.01-5.

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 71121.01-5.

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 71121.01-5.

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 71121.01-5.

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 71121.01-5.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator for Unit 2 and Unit 3 for the period from the 2nd quarter 2008 through the 2nd quarter 2009, to determine the accuracy of the PI data reported during those periods. Performance Indicator definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records,

maintenance work orders, issue reports, event reports and NRC Integrated Inspection Reports for the period of June 2008 through June 2009 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two safety system functional failures samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator for Unit 2 and Unit 3 for the period from the 2nd quarter 2008 through the 2nd quarter 2009, to determine the accuracy of the PI data reported during those periods. Performance Indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated Inspection Reports for the period of June 2008 through June 2009 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI emergency AC power system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - High Pressure Injection Systems performance indicator for Unit 2 and Unit 3 for the period from the 2nd quarter 2008 through the 2nd quarter 2009, to determine the accuracy of the PI data reported during those periods. Performance Indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's

operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of June 2008 through June 2009 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI high pressure injection system samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 Barrier Integrity – Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System (RCS) Specific Activity PI for Units 2 and 3 for the period from July 2008 through March 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed Chemistry Department records including isotopic analyses to determine if the greatest dose equivalent iodine (DEI) values obtained during steady state operations corresponded to the values reported to the NRC. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. None were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes two reactor coolant system specific activity samples (one sample per unit) as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of items Entered Into the CAP

a. Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify 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. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily CAP Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. Specifically, the inspectors performed a review of the licensee's corrective actions program documents related to the areas of switchyard and fire protection issues. The inspectors' review nominally considered IRs that were generated in the six month period of January 2009 through June 2009, although some examples expanded beyond those dates where the scope of the trend warranted. In addition to reviewing the IR documents for trends the inspectors compared their results with issues identified in the licensee's trending reports.

A sample of the licensee IRs associated with trends was reviewed for corrective action adequacy.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

The inspectors identified a trend in the area of temporary leak repairs of fire protection piping. Specifically, the inspectors identified three examples within the last nine months where a plant procedure regarding the use of temporary leak repairs for fire protection piping was not followed.

The licensee identified two separate leaks on fire protection pipe 6011-8"-H3 in 2006. The licensee procedure for control of temporary leak repairs, CC-AA-404, "Maintenance Specification: Application Selection, Evaluation and Control of Temporary Leak Repairs," Revision 8, Section 5.3.4, states that the maximum duration for installation [of a temporary leak repair] is one refueling cycle [two years] or until the next refueling outage…When installation for a period longer than maximum stated above is needed, it shall be reviewed and approved in accordance with the temporary configuration control process, CC-AA-112. These repairs were not repaired in the time period required by CC-AA-404 and no review and approval was performed per CC-AA-112. This failure to follow procedure was considered minor at the time because the piping was eventually successfully repaired with no further incident. The inspectors discussed this issue with Licensee senior management on January 21 and January 23, 2009.

A third leak on fire protection pipe 2-4106-6"-O was identified in March 2007 and temporarily repaired with a clamp. The pipe was not repaired by March 2009. The last Unit 2 refueling outage was in November 2007 however a refueling outage was not needed to repair this piping. No review or evaluation was performed per CC-AA-404 by March 2009. After the inspectors discussed this issue with the licensee an evaluation was performed in accordance with CC-AA-112 on June 3, 2009. The pipe is scheduled for repair the week of June 22, 2009. This issue is still considered minor because the pipe will be repaired without further leakage.

Minor performance deficiencies are not usually documented in inspection reports. However, the failure to address an issue that was specifically discussed with licensee management as an area of noncompliance demonstrates a weakness in the corrective action process.

.4 In-depth Review Annual Sample: Review of Operator Workarounds (OWAs)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the OWAs on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The inspectors reviewed current operational challenge records to determine whether the licensee had entered the challenges into the CAP and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions.

This review constituted one operator workaround annual inspection sample as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

.5 Selected Issue Follow-Up Inspection: Radwaste Building Material Condition

a. Inspection Scope

The inspectors reviewed the licensee's CAP related to material/radiological condition issues in the Radwaste Building, including the status of legacy (long-standing) material condition problems, the licensee's identification and evaluation of emerging issues and the associated radiological hazard assessment. Assignment Reports (ARs) and selected work requests generated for the approximate 2-year period that preceded the inspection were reviewed to determine if repetitive problems existed and to evaluate the adequacy of the licensee's problem identification and resolution program for these material condition issues. The inspectors also walked down infrequently accessed high and locked high radiation areas of the Radwaste Building to independently assess area and equipment material condition and to evaluate the radiological hazards and controls.

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

b. Issues

(1) Effectiveness of Problem identification

In 2005, the licensee initiated periodic material condition surveillances of several infrequently accessed areas of the Radwaste Building in response to industry problems. These surveillances documented legacy material condition problems and a few new (emerging) material condition issues associated mostly with radwaste equipment degradation resulting in leakage of contaminated fluids. As the material condition surveillance program expanded into other areas of the Radwaste Building, other legacy material condition problems were identified by the licensee in difficult to access vault/tank rooms including areas no longer used to process radwaste.

In 2007, 2008, and into 2009, numerous ARs were generated to document a variety of emerging material condition issues in the Radwaste Building. These emerging issues were largely self-revealed through equipment leaks, other sources of water intrusion into the Radwaste Building, through unexpected area

contamination, or were NRC identified during walkdowns. These issues included repetitive instances of contamination (concentrator system waste) on the floor of the Radwaste Building basement, ongoing intrusion of groundwater into the basement and plugged floor drains.

While these legacy material condition problems were being licensee identified through annual or semi-annual surveillance activities, the emerging issues were often identified by self-revealed means and through NRC walkdowns. The inspectors determined that the licensee had not proactively identified degrading radwaste equipment and systems, which was the cause of many of the emerging issues. Additionally, the inspectors concluded that an adequate review of these emerging issues was not always performed by the licensee taking into account previous similar incidents in an effort to identify commonality amongst them.

(2) Prioritization and Evaluation of Problems

As material condition issues emerged in the Radwaste Building in 2007, readily apparent causes were determined (such as visible equipment degradation and leakage) and short term solutions were taken by the licensee. The licensee initially failed to adequately prioritize some of the issues and, as a result, was not effective in evaluating the root and contributing causes to ensure the problems were understood. The rigor and depth of evaluations was at times inadequate. As the number of emerging material condition issues escalated or as issues repeated, the licensee's evaluations broadened and other causes were determined or were speculated. In some instances, the licensee had not evaluated an issue fully to determine its causes until prompted by the NRC or following multiple occurrences. For example, in the approximate 2-year period that preceded the inspection, three self-revealed or NRC-identified occurrences of concentrator waste were noted on the radwaste basement floor, likely attributable to the same source. During the same period, influx of water from source(s) outside of the Radwaste Building into the Waste Collector Tank Room continued and basement floor drains were identified to be plugged on at least three occasions.

In 2009, the licensee recognized the flaws in its previous evaluations and began developing a troubleshooting plan to better understand the cause and extent of the issues that emerged over the previous 2-years. An Aggregate Radwaste Improvement Plan was also being developed.

(3) Effectiveness of Corrective Actions

As described above, the licensee had not always or consistently been effective in evaluating the root and contributing causes for emerging radwaste material condition issues to ensure corrective actions were properly targeted. Corrective actions sometimes focused on short term readily apparent solutions such as repair of visible equipment leaks but failed to address broader scope problems necessary to prevent recurrence or the emergence of other related problems. As a consequence, areas were re-contaminated and unnecessary radiation dose was expended to reclaim the areas.

c. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 Instrument Air Isolation Valve Mispositioning on April 26, 2009

Introduction: A finding of very low safety significance and associated non-cited violation of Technical Specification Section 5.4.1 were self-revealed when the Unit 2 instrument air system had a significant pressure drop because procedure DOP 4700-01, "Instrument Air System Startup," Revision 46 was not followed.

Description: On April 26, 2009, a non-licensed operator was assigned to make a change to Unit 2 instrument air equipment alignment. There are five instrument air compressors 2A, 2B, 3A, 3B and 3C. The 3C instrument air compressor is a swing compressor. It can supply compressed air to either the Unit 2 or Unit 3 instrument air system. The 3C instrument air compressor had been aligned to Unit 2 instrument air to support maintenance on the 2A instrument air compressor. The maintenance on the 2A instrument air compressor was completed and the associated out-of-service on the Unit 2 instrument air system had been cleared on April 24, 2009. The non-licensed operator was tasked with starting the 2A instrument air compressor and re-aligning instrument air such that the 2A instrument air compressor was supplying Unit 2 and the 3C instrument air compressor was supplying U3 instrument air.

The non-licensed operator failed to follow procedure DOP 4700-01, "Instrument Air System Startup," Revision 46, step G.5.n.(4), which required opening the 2-4704-500B, 2A Instrument Air "B" after filter outlet isolation valve. With the 2-4704-500B valve closed when the 3C instrument air compressor was removed from supplying Unit 2, only the 2B instrument air compressor was available to supply Unit 2 instrument air loads. Only one instrument air compressor is insufficient to carry the U2 instrument air loads.

Consequently, there was a Unit 2 instrument air transient. Unit 2 instrument air pressure dropped from a normal pressure of about 100 psi to about 78 psi before the 3C instrument air compressor was restored to U2 and the instrument air transient turned. There is an automatic action that a station air (SA) cross-tie valve opens at a pressure of 85 psi. The SA cross-tie valve did open, but with the 2-4704-500B closed, SA was isolated from instrument air. Per the abnormal operating procedure for a loss of instrument air there is a procedure requirement to scram the effected Unit at an instrument air pressure of 55 psi.

Analysis: The inspectors determined that the failure to follow procedure DOP 4700-01, "Instrument Air System Startup," Revision 46, was a performance deficiency.

The finding was determined to be more than minor because the finding could be reasonably viewed as a precursor to a significant event. Specifically, the failure to follow procedure resulted in an instrument air transient that could have resulted in a unit scram if the instrument air system had not been recovered in a timely manner. The inspectors concluded this finding was associated with the Initiating Event Cornerstone.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a, for the Initiating Event Cornerstone. The inspectors determined that the finding represented an increase in the likelihood of a reactor trip and the likelihood that mitigation equipment would be unavailable because the finding increased the likelihood of a loss of instrument air (LOIA) event. Therefore, the finding required a phase 2 SDP evaluation. The duration of the condition was less than 3 days. Using the SDP usage rules from IMC 0609 Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations", the inspectors increased the initiating event frequency for the LOIA event by one order of magnitude for the 3-day exposure period. The result was an estimated change in core damage frequency of less than 1.0E-6/yr. As a result, the finding was determined to be of very low safety significance (Green) based on the phase 2 SDP evaluation.

This finding had a cross-cutting aspect in the area of Human Performance, Work Practices because the operator did not use the expected human performance techniques (H.4.(a)). The non-licensed operator did not properly use the expected technique for place keeping in the procedure, did not use the expected method to ensure the valve was in the correct position (physically check it in the closed direction), and did not ask for a peer check. In addition, the inspectors questioned whether the individual's fitness for duty could have been a contributing factor. The event occurred at 8 hours into a 12 hour shift at about 3:00 a.m. The licensee stated that the individual was evaluated for fitness for duty and was found to be acceptable. However, the non-licensed operator stated that the lighting was bad and that the valve looked open. The inspectors reviewed the area and found the lighting to be degraded but acceptable and the valve position to be easily distinguishable from a distance.

Enforcement: Technical Specification Section 5.4.1 states, in part, that "Written procedures shall be established, implemented, and maintained covering the following activities: The applicable procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978," paragraph 3.r of this RG states, in part, that procedures for starting up and changing modes of operation for the instrument air system shall be prepared and activities shall be performed in accordance with these procedures. The licensee established DOP 4700-01, "Instrument Air System Startup," Revision 46 as the implementing procedure for starting up and changing modes of operation for the instrument air system.

Contrary to the above, on April 26, 2009, a non-licensed operator was assigned to make a change to Unit 2 instrument air equipment alignment. The 3C instrument air compressor had been aligned to Unit 2 instrument air to support maintenance on the 2A instrument air compressor. The maintenance on the 2A instrument air compressor was completed and the associated out-of-service on the Unit 2 instrument air system had been cleared on April 24, 2009. The non-licensed operator was tasked with starting the 2A instrument air compressor and re-aligning instrument air such that the 2A instrument air compressor was supplying Unit 2 and the 3C instrument air compressor was supplying U3 instrument air. The non-licensed operator failed to follow procedure DOP 4700-01, step G.5.n.(4), which required opening the 2-4704-500B, 2A Instrument Air "B" after filter outlet isolation valve. With the 2-4704-500B valve closed when the 3C instrument air compressor was removed from supplying Unit 2, only the 2B instrument air compressor was available to supply Unit 2 instrument air loads. Only one instrument

air compressor was insufficient to carry the U2 instrument air loads and an instrument air transient occurred.

The licensee performed the following corrective actions. The non-licensed operator was relieved from duty. Both the non-licensed operator and the unit supervisor were counseled for the failure to perform expected work practices. The licensee also found that this event was similar to other problems discussed in the licensee's Root Cause Report 893376, "Operations Cyclic Performance." Multiple corrective actions were assigned in Root Cause Report 893376 to address a lack of operations supervision enforcing department standards. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as IR 911794, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000237/2009003-03; 05000249/2009003-03)**

.2 Closed LER 237/2009-002-00, " Unit 2 High Pressure Coolant Injection Suction Valve Fails to Close"

The inspectors reviewed licensee event report (LER) 237/2009-002-00, "Unit 2 High Pressure Coolant Injection Suction Valve Fails to Close," to ensure that the issue documented in the report was adequately addressed in the licensee's corrective action program.

On March 15, 2009, at approximately 2025 hours (CDT), Dresden Nuclear Power Station Operations personnel discovered during a maintenance activity that motor operated valve (MOV) 2-2301-6, Unit 2 high pressure coolant injection (HPCI) suction valve, would not close. The valve is a normally open valve and allows the flow of cooling water from the condensate storage tanks (CST) to the suction of the HPCI pump. Additionally, MOV 2-2301-6 is required to close on high water level in the torus to prevent exceeding torus structural design values during a postulated accident or CST low level to prevent the CSTs from draining to a level below a pre-determined set point. Troubleshooting and diagnostic testing identified that the valve's failure to close was attributed to valve internal binding. The valve was last successfully closed on January 13, 2009.

The root cause of this event will not be determined until internal valve inspections are performed in the next Unit 2 refuel outage currently schedule for November 2009.

The valve was declared operable and capable to perform its design function after it was verified that all diagnostic test parameters for torque and thrust were within prescribed specifications. Monthly diagnostic testing will be performed on MOV 2-2301-6 to verify its continued operability until internal valve inspections are performed.

The inspectors reviewed the licensee's evaluation to determine the effect of this event on the operability of the HPCI and torus during the time that it is hypothesized that MOV 2-2301-6 would not close (i.e., January 13, 2009 to March 15, 2009). The evaluation concluded that HPCI would have operated long enough to fulfill its safety function. A review of the actual torus water levels during this timeframe identified that the torus would not have exceed its structural design values during a postulated accident.

Corrective actions in issue reports 893211, 894450, 894307, 898203, 900649, 912252, and 924049 and LER237/2009-002-00 were reviewed by the inspectors and no findings of significance were identified.

This LER is closed.

This represented one inspection sample.

.3 Closed LER 237/2008-002-00, "Unit High Pressure Coolant Injection [HPCI] System Declared Inoperable"

On April 15, 2008, a control room operator identified during an hourly panel walkdown that the Unit 2 HPCI flow controller had failed which rendered the HPCI system inoperable. The flow controller apparently failed due to age related degradation. The controller was replaced within the Technical Specification LCO required time limit. The controller was within the preventive maintenance window for replacement. The licensee moved up the preventive maintenance replacement for similar controllers and all controllers have been replaced or overhauled. The inspectors reviewed the licensee's corrective actions and had no further concerns. The inspectors did not identify a performance deficiency and there was no violation of regulatory requirements. This LER is closed.

4OA6 Management Meetings

.4 Exit Meeting Summary

On July 15, 2009, the inspectors presented the inspection results to Mr. T. Hanley, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meeting

Interim exits were conducted for:

- Access Control to Radiologically Significant Areas with Mr. T. Hanley and others on May 1, 2009.

- The licensed operator requalification training program annual inspection results with Mr. P. O'Connor, License Operator Requal Training Lead, on July 9, 2009, via telephone.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
T. Hanley, Site Vice President
S. Marik, Station Plant Manager
H. Bush, Radiation Protection Manager
B. Finely, Security Manager
D. Glick, Shipping Specialist
J. Griffin, Regulatory Assurance - NRC Coordinator
D. Gronek, Operations Director
J. Hansen, Corporate Licensing
L. Jordan, Training Director
R. Kalb, Chemistry
P. Karaba, Maintenance Director
M. Kluge, Design Engineer
D. Leggett, Nuclear Oversight Manager
R. Laburn, Radiation Protection
M. Marchionda, Regulatory Assurance Manager
M Overstreet, Lead Radiation Protection Supervisor
P. O'Connor, License Operator Requalification Training Lead
M. Overstreet, Lead Radiation Protection Supervisor
C. Podczerwinski, Maintenance Rule Coordinator
P. Quealy, Emergency Preparedness Manager
E. Rowley, Chemistry
R. Rybak, Regulatory Assurance
J. Sipek, Engineering Director
N. Starcevich, Radiation Protection Instrumentation Coordinator
J. Strmec, Chemistry, Environmental and Radwaste Manager
S. Taylor, Regulatory Assurance Manager
S. Vercelli, Work Management Director

NRC
M. Ring, Chief, Division of Reactor Projects, Branch 1
J. Benjamin, Project Engineer

IEMA
R. Zuffa, Illinois Emergency Management Agency
R. Schulz, Illinois Emergency Management Agency

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

05000237/2009003-01 05000249/2009003-01	URI	Failure of 2/3 Emergency Diesel Generator (EDG) Due to Lube Oil Leak On Y-Strainer
05000249/2009003-02	NCV	Failure to Have a Procedure to Sample and Establish Administrative Controls for pH in the Torus
05000237/2009003-03 05000249/2009003-03	NCV	Instrument Air Isolation Valve Mispositioning on April 26, 2009

Closed:

05000249/2009003-02	NCV	Failure to Have a Procedure to Sample and Establish Administrative Controls for pH in the Torus
05000237/2009003-03 05000249/2009003-03	NCV	Instrument Air Isolation Valve Mispositioning on April 26, 2009
237/2009-002-00	LER	Unit 2 High Pressure Coolant Injection Suction Valve Fails to Close
237/2008-002-00	LER	Unit High Pressure Coolant Injection [HPCI] System Declared Inoperable

Discussed:

None.

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection (71111.01)

- IR 923788, "Common Line Blockage on Chemical Injection to EDG Cooling Water"
- WO 01198342, "D2/3 QTR TS D/G CLG WTR PMP TEST For IST Program Surveillance (Quarterly 2/3 Diesel Generator Cooling Water Pump in-service test)," April 3, 2009
- IR 918277,"NRC Concern Missile Hazards Near TR2"

1R04 Equipment Alignment (71111.04)

- Drawing M-374 "Diagram of High Pressure Coolant Injection Piping" Rev CQ
- DOP 2300-M1/E1 "Unit 3 HPCI System Checklist" Rev 36
- DOP 2300-01 "High Pressure Coolant Injection (HPCI) System Standby Operation" Rev 39

1R05 Fire Protection (71111.05)

- Fire Pre-Plan for FZ 8.2.5.D, Revision 8
- Fire Pre-Plan for FZ 8.2.5.E, Revision 8
- Fire Pre-Plan for FZ 8.2.5.E, Revision 8
- Fire Pre-Plan for FZ 1.1.2.5.A, Revision 8

1R07 Heat Sink Performance

- WO 1172779, "D2 An PM Perform Hx Thermal Performance Test – 2B LPCI Hx"
- WO1168983, "D3 An PM Perform Hx Thermal Performance Test – 3B LPCI Hx"

1R11 Licensed Operator Requalification Program (71111.11Q)

- NRC Requalification Exam 2007-2009 Cycle 11: Scenarios OPEX-AU Rev. 01 and OPEX-AX Rev. 00
- NRC Requalification Exam 2007-2009 Cycle 11:Scenarios OPEX-T Rev. 10 and OPEX-AV Rev. 01
- Requalification Examination Results/Calendar Year 2009

1R12 Maintenance Effectiveness (71111.12)

- IR 908112, "Roof Drain Penetration Leaking on 2/3 EDG Governor"
- IR 926605, "Oil Leak on the 2/3 DG Turbo Lube Oil Y-Strainer"

1R15 Operability Evaluations (71111.15)

- IR 894307, "Contingency Maint on the 2-2301-6 MOV"
- IR 894450, "MOV 2-2301-6 Valve Binding Observed"
- IR 900649, "HPCI 2-2301-6 Valve Design Information Discrepancies"

- OpEval # 09-002, Rev. 000, 2-2301-6 (U2 HPCI Suct Vlv from CST)
- MOV 2-2301-6 Root Cause Report, dated April 10, 2009
- EC 374991, “Evaluate HPCI System Function with 2-2301-6 Valve Failed to Close,” Revision 000
- WO 1225564, “D2 1M EQ IST Alert Range Vlv Timing/Modified MOV Diag 2-2301”
- IR 924049, “Errors in Calculating New Low-Low CST Levels in EC 374991”
- IR 899954 “Thermal Overload Calculation for MOVs Is Non-Conservative”
- DRE-2-2301-5 “MIDACALC Results, Dresden, Unit 2, DC Motor Operated Gate Valve Calculation” Rev 4
- Curve Sheet PTA 032480 “Overload Relay Time – Current Characteristics” Rev 1
- IR 812240, “3A Core Spray Pump Leaking Union Identified”
- CY-AB-120-310, “Suppression Pool/Torus Chemistry,” Revision 4
- DES 6600-03, “Safety Related Contact Testing – Diesel Generators,” Revision 02
- Drawing 12E-2351A, “Schematic Diagram Engine Control and Generator Excitation Standby Diesel Generator 2/3”
- IR 932854, “Ops Screening for Reportability – EDG Wiring Deficiency”
- DOA 6500-12, “Low Switchyard Voltage,” Revision 18
- DOS 6600-01, “Diesel Generator Surveillance Tests,” Revision 109

1R18 Plant Modifications (71111.18)

- IR 908209, “Offgas Alarm Setpoint Not in Compliance with TS Appendix B”
- Unit 2 License Amendment No. 163
- Unit 3 License Amendment No. 158
- IR 918435, “3A SJAE Nozzle Replacement Causes Vacuum Transient”
- DAN 902(3)-3 D-2, “Offgas Rad Monitor Hi”
- IR 920400, “Regulatory Commitment for Tech Spec Amendments 163 and 158”
- IR 920323, “NRC Questions Operations Response to U3 Off Gas Hi Rad Alarm”
- WO 1230547, “Offgas Alarm Setpoint Not in Compliance with TS Appendix B”
- WO 1231439, “Need a WO to Reset U3 OG Rad Monitors”

1R19 Post-Maintenance Testing (71111.19)

- WO 565281, “D2/3 6Y PM Standby Diesel Generator Inspection”
- DMS 6600-02, “Diesel Generator Mechanical Inspection and Preventive Maintenance (2 yr., 4 yr., 6 yr.),” Revision 30
- DMS 6600-03, “Diesel Generator Mechanical Inspection and Preventive Maintenance (12 yr.), Revision 18
- IR 910596, “NRC Inspector Questions SBLC DOS [Dresden operating surveillance] Acceptance Criteria”
- WO 01004810-09, “Ops PMT 3C Main Steam Line Electromatic RV”
- WO 01004810-08, “Perform VT-2 Inspections Following Valve Replacement”

1R20 Outage Activities (71111.20)

- DGP 01-01, “Unit Startup,” Revision 149

1R22 Surveillance Testing (71111.22)

- DOS 1400-09, “2 Year U3 Core Spray Pump Comprehensive Test,” Revision 5
- ASME OM Code – 2001, “Subsection ISTB, Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants”
- IR 912765, “Leak Detection and Reduction Program”
- Appendix A, “Unit NSO Daily Surveillance Log,” Revision 116
- IR 780436, “U3 Drywell Activity and DWEDS Flow Adverse Trend”
- IR 807998, “Red Phone Call Due to RCS Leakage Detection Instrumentation”
- IR 817021, “Increase in Cobalt Activity on Unit 3”
- IR 860747, “Drywell Activity Results Suspect”
- DOS 6600-12, “Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart,” Revision 48
- Appendix X, “Technical Specification Action Statement Initiated Surveillances,” Revision 30
- Technical Evaluation 362860, “Ultra Low Sulfur Diesel Fuel Evaluation,” October 6, 2006.
- EC 363408, “Diesel Generator Ultra Low Sulfur Diesel (ULSD) Fuel Upgrade,” Revision 0
- DIS 1500-32, “Division I & II Low Pressure Coolant Injection ECCS Loop Selection Circuitry Logic System Functional Test,” Revision 5
- IR 907321, “NRC Identified Concern”
- DFPS 4123-07, “Unit 1 Fire Pump Capacity Check,” Revision 38
- IR 919301, “Oil Leak on U1 DFP Turbo Oil Line”
- IR 934963, “Procedural Discrepancies Identified During U1 DFP CAP Test”
- IR 935541, “U1 DFP Governor Need to be Adjusted”
- IR 935492, “Unit 1 DFP Fire Pump Surveillance Clarifications”
- IR 898201, “2009 Byron CDBI Issue – Degraded Voltage 5-minute Time Period.

1EP6 Drill Evaluation (71114.06)

- 2007-2009 Cycle 11; Scenarios OPEX-T Rev. 10 and OPEX-AV Rev. 01

2OS1 Access Control to Radiologically Significant Areas

- RP-AA-210; Dosimetry Issue, Usage and Control; Revision 15
- RP-AA-460; Controls for High and Locked High Radiation Areas; Revision 17
- RP-AA-460-002; Additional High Radiation Exposure Control; Revision 0
- RP-AA-300; Radiological Survey Program; Revision 5
- RP-AA-302; Determination of Alpha Levels and Monitoring; Revision 2
- DFP 0800-39; Control of Material/Equipment Hanging in the Units 2 and 3 Spent Fuel Pools; Revision 14
- Report of Focused Area Self-Assessment; Control of Access to Radiologically Significant Areas; dated February 27, 2009
- ALARA Plan for RWP 10009288; D3R20 Drywell Nuclear Instrumentation; Revision 0
- ALARA Plan for RWP 10009306; D3R20 Drywell In-Service-Inspection Activities; Revision 0
- ALARA Plan for RWP 10009298; D3R20 Drywell Control Rod Drive System Maintenance; Revision 1
- RWP 10010249 and ALARA Plan; Remove Waste from Waste Concentrator “B” Vault; Revision 0
- Unit 2 and 3 Fuel Pool (non-fuel) Inventory; January 2009
- RWP 10010183 and ALARA Plan; Unit 2 and 3 Dry Cask Storage Activities; Revision 0
- TID-2009-006; Annual Bioassay Program Review; dated November 17, 2008

- AR 00849512; Need to Lock Cranes/Hoists to Comply with Procedure; dated November 25, 2008
- AR 00852691; Accounting of Non-Emergency High Radiation Area Keys Not Performed Daily; dated December 5, 2008

4OA1 Performance Indicator Verification

- CY-AA-130-3010-F-03; Dose Equivalent Iodine Determination; Calculations and Gamma Spectroscopy Results (selected periods between July 2008 and March 2009)
- CY-AA-130-300; Gamma Spectrometry; Revision 4
- CY-DR-110-200; Plant System Sampling; Revision 16
- LS-AA-2090; Monthly Data Elements for NRC Reactor Coolant System Specific Activity; July 2008 – March 2009

4OA2 Identification and Resolution of Problems

- AR 00880560; Sludge Found on Radwaste Basement Floor; dated February 9, 2009
- AR 00884519; Main Concentrated Waste Tank; dated February 23, 2009
- AR 00594354; Penetration in Waste Demin Vault Leaks into Radwaste Basement; dated February 21, 2007
- AR 00811979; Resin on Floor of Radwaste Basement; dated August 28, 2008
- Troubleshooting Plan for Main Concentrated Waste Vault Sludge; undated
- Operator Challenge No. 50, “Unit 2 CRDs”
- Operator Challenge No. 63, “Unit 2 Torus Level Increase”

LIST OF ACRONYMS USED

AC	Alternating current
ANS	American National Standard
AR	Assignment Report
ASME	American Society of Mechanical Engineers
AST	Alternate Source Term
CAP	Corrective Action Program
CCSW	Containment Cooling Service Water
CFR	Code of Federal Regulations
CRD	Control Rod Drive
CS	Core Spray
CST	Condensate Storage Tank
DBA	Design-basis Accident
DEI	Dose Equivalent Iodine
DRP	Division of Reactor Projects
EC	Engineering Change
EDG	Emergency Diesel Generator
FME	Foreign Material Exclusion
HPCI	High Pressure Coolant Injection
IA	Instrument Air
IAC	Instrument Air Compressor
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
IST	In-service Test
LER	Licensee Event Report
LCO	Limiting Condition for Operation
LOCA	Loss of Coolant Accident
LOIA	Loss of Instrument Air
LPCI	Low Pressure Coolant Injection
MOV	Motor Operated Valve
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSO	Nuclear Safety Operator
PARS	Publicly Available Records
OWA	Operator Workaround
PI	Performance Indicator
PM	Planned or Preventative Maintenance, or Post-Maintenance
PMT	Post-Maintenance Test
RCS	Reactor Coolant System
RWP	Radiation Work Permit
RG	Regulatory Guide
SBLC	Standby Liquid Control
SDP	Significance Determination Process
SSC	Structures, Systems, and Components
TS	Technical Specification

TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order