



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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May 10, 2010

Mr. Charles G. Pardee
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President and Chief Nuclear Officer (CNO), Exelon Nuclear
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Warrenville, IL 60555

**SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
INTEGRATED INSPECTION REPORT 05000237/2010-002;
05000249/2010-002**

Dear Mr. Pardee:

On March 31, 2010, 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 findings, which were discussed on April 14, 2010, 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.

Based on the results of this inspection, one self-revealed and four NRC-identified findings of very low safety significance were identified. Three of these findings involved a violation of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, four licensee-identified violations are listed in Section 4OA7 of this report.

If you contest the subject or severity of a NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Dresden Nuclear Power Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Dresden Nuclear Power Station. The information that you provide will be considered in accordance with Inspection Manual Chapter 0310.

C. Pardee

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Sincerely,

/RA/

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 05000237/2010-002; 05000249/2010-002
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000237/2010-002; 05000249/2010-002

Licensee: Exelon Generation Company

Facility: Dresden Nuclear Power Station, Units 2 and 3

Location: Morris, IL

Dates: January 1 through March 31, 2010

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Enclosure

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SUMMARY OF FINDINGS

IR 05000237/2010-002, 05000249/2010-002; 01/01/2010 - 03/31/2010; Dresden Nuclear Power Station, Units 2 & 3; Surveillance Testing, Post-Maintenance Testing, Radiation Monitoring Instrumentation, Identification and Resolution of Problems, and Follow-Up of Events.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors and one Green finding was self-revealed. Three of these 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). 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. The failure of the Unit 3 Main Turbine Stop Valve (MSV) # 4 fast acting solenoid valve on November 6, 2009, resulted in a self-revealed finding of very low safety significance. The licensee failed to use the correct o-rings and bolts when replacing the Unit 3 MSV #4 fast acting solenoid valve during the Unit 3 refueling outage in 2008 which led to the failure. The equipment was not safety-related. Therefore, this finding did not result in a violation of regulatory requirements. The licensee's corrective actions included revising maintenance procedure DEP 5600-01, "Main Turbine Valve Solenoid and Servo Maintenance," to incorporate the actions described in GE Technical Information Letter 1594. The bolts on the U3 and U2 solenoid valves were replaced. The licensee did not determine that the o-rings were defective until after both this Unit 3 forced outage and the Unit 2 November 2009 refueling outage were complete. Therefore, one corrective action was to write a work order to change the o-rings on the solenoids for both units. In addition, corrective actions were put in place to address weaknesses in the evaluation of Operating Experience. The licensee addressed this issue in the corrective action program under Issue Reports 899829 and 989733.

The inspectors determined that the use of o-rings, GE part number U472X000B906, in U3 turbine control valve solenoids, was contrary to Vendor Technical Information Program Binder D1180, General Electric Steam Turbine Generator (GEK5551), Tab 8, GE drawing 115D2402 (Revision 12), and GE Technical Information Letter (TIL) 1594, dated November 30, 2007, which required the use of o-rings, GE part number U472X000BS906, and was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of procedure quality and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability. 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 Events Cornerstone. The electro-hydraulic control leakage caused by one or more failed o-rings could have resulted in a turbine trip and reactor scram. However, the failure would not affect mitigating equipment or functions so the finding screened as having very low safety

significance. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not implement and institutionalize Operating Experience through changes to station processes, procedures, equipment, and training programs. P.2(b) (Section 4OA3.1)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, licensee personnel failed to maintain safety-related cables in underground manholes from becoming repeatedly submerged, which resulted in subjecting the cables to an environment for which they were not qualified. As corrective action, the licensee generated work order (WO) 01271108 on September 24, 2009, to remove the seals on the conduit which contained the cables and which kept water from draining out of the conduit. This issue was entered into the licensee's corrective action program as Issue Report (IR) 975308.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because it was a qualification deficiency that did not result in a loss of operability. The inspectors concluded that there was not a cross-cutting issue associated with this violation. (4OA2.4)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of Technical Specification 5.5.4 for the licensee failing to follow Step I.2.a and b of Procedure DOS 1500-08, "Discharge of Containment Cooling Service Water (CCSW) From Low Pressure Coolant Injection (LPCI) Heat Exchanger (Hx) During CCSW Pump Operations," Revision 16. Specifically, the licensee failed to perform a tube leak test as required by DOS 1500-08 when activity exceeded 1.5E-6 microcuries/milliliter. The licensee's corrective actions included a change to DOS 1500-08 to ensure personnel do not waive performance of the test procedure until tube leak checks are considered during non-routine samples of CCSW and revising the chemistry sampling procedure CY-DR-110-220, "LPCI Service Water (CCSW) and Torus Water Sampling," to notify operations to evaluate performance of a tube leak check if activity exceeds 1.5E-6 microcuries/milliliter.

The inspectors determined that the failure to perform a tube leak test or perform Calculated CCSW Sample Activity Limit and Canal Activity Calculations was contrary to DOS 1500-08, and was a performance deficiency. The finding was determined to be more than minor because the finding, if left uncorrected, would become a more significant safety concern. Specifically, had there been an actual LPCI Hx tube leak radioactivity could have been released. 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 Containment Barrier Cornerstone. All four questions on this table were answered "no." There was no actual degradation of the containment barrier. Therefore, the issue screened as having very low safety significance. This finding had a

cross-cutting aspect in the area of Human Performance, Decision Making because the licensee did not demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it was unsafe in order to disapprove the action. Specifically, the licensee assumed the activity in the sample was coming from the floor drain system with no valid proof that was the case. H.1(b) (Section 1R22)

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a finding of very low safety significance for the failure to meet a regulatory commitment to maintain a contingency plan for obtaining highly radioactive samples of reactor coolant, the suppression pool, and drywell atmosphere for post-accident plant recovery planning. Specifically, the licensee's contingency plan was not adequately maintained to ensure the High Radiation Sampling System (HRSS) functioned adequately or otherwise was demonstrated to be in a state of readiness to allow samples to be obtained within a two-week window. No violations of regulatory requirements were identified related to this finding. Corrective actions were being developed to ensure the licensee's contingency plan commitments would be met. Those actions included a means to improve system ownership and establishment of an effective process for HRSS equipment maintenance and repair at a priority consistent with its intended use.

The finding was more than minor because it impacted the facilities and equipment attribute of the Emergency Preparedness Cornerstone and adversely affected the cornerstone objective of ensuring capability to implement adequate measures to protect health and safety of the public in the event of a radiological emergency. Specifically, equipment intended to obtain highly radioactive samples that are used to assess reactor core condition as part of post-accident recovery activities was not demonstrated to be in a readiness condition consistent with the licensee's contingency plan. The finding was determined to be of very low safety significance because it involved equipment, which supplements the licensee's emergency plan for reentry and recovery activities as provided in the planning standard of 10 CFR 50.47(b)(8), and represented a planning standard problem associated with demonstrating functional readiness of that equipment. The finding was determined to be associated with a cross-cutting aspect in the area of human performance in the resources component, in that, the licensee failed to ensure that equipment to support its emergency plan was functional or otherwise was demonstrated to meet a defined status of operational readiness. H.2(d) (Section 2RS5)

Miscellaneous Matters

Severity Level IV. A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," was identified by the inspectors for the licensee's failure to record the identity of various personnel who performed seven post-maintenance tests (PMTs) related to Unit 3 EDG maintenance. Despite the PMTs being related to work on safety-related components, an activity affecting quality, neither the licensee's procedure MA-AA-716-012, "Post-Maintenance Testing," nor DAP 15-10, "Post-Maintenance Testing Program," required the identity of the inspector or tester to be recorded. Completed corrective actions included adding PMT documentation requirements to DAP 15-10 and briefing individuals who perform PMTs.

This finding was determined to be more than minor because the finding was similar to IMC 0612, Appendix E examples 1b since a portion of required records were irretrievably lost, and 2h since multiple examples were identified as failures to properly implement the same regulatory requirement. Following IMC 0612, Appendix B, it was apparent that this issue did not fall directly under a cornerstone and that incomplete information was recorded in the seven PMTs. Therefore, the Enforcement Policy was used to screen the severity in conjunction with the IMC 0612, Appendix E, Examples 1b and 2h. Since MA-AA-716-012, "Post-Maintenance Testing," did not properly implement regulatory requirements, this finding has a cross-cutting aspect in the area of Human Performance, Resources because the licensee did not provide complete, accurate, and up-to-date procedures to plant personnel. H.2(c) (Section 1R19)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 2

On January 9, 2010, power was reduced to approximately 69 percent electrical output for a control rod pattern adjustment. The unit returned to full power on January 10, 2010.

On February 27, 2010, power was reduced to approximately 67 percent electrical output for a control rod sequence change, control rod drive (CRD) scam timing and turbine valve testing. The unit returned to full power on the same day.

Unit 3

On January 29, 2010, power was reduced to approximately 71 percent electrical output for feedwater regulating valve maintenance. The unit returned to full power on the same day.

On March 6, 2010, power was reduced to approximately 99 percent electrical output for turbine valve testing. The unit returned to full power on the same day.

On March 13, 2010, power was reduced to approximately 69 percent electrical output for a control rod sequence change, CRD scam timing and turbine valve testing. The unit returned to full power on the same day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. 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. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this

report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Radwaste tanks; and
- Condensate storage tanks.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q and S)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 3 'A' CS [core spray] when 'B' CS OOS [out-of-service] for bearing cooler testing;
- Unit 3 'B' CS when 'A' CS OOS for bearing cooler testing;
- Unit 2/3 EDG [emergency diesel generator] when Unit 3 EDG OOS for fragnet; and
- 3A SBLC [standby liquid control] when 3B SBLC pump OOS for leak repair.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. 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, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components 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 four 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 March 24, 2010, the inspectors performed a complete system alignment inspection of the Unit 2 Low Pressure Coolant Injection (LPCI) 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.

Also, additional activities were performed during this system walkdown that were associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." These activities are described in bullet .3 of this section.

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

b. Findings

No findings of significance were identified.

.3 System Walkdown associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope and Documentation

On March 24, 2010, the inspectors conducted a walkdown of the Low Pressure Coolant Injection (LPCI) System in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d). The inspectors also verified that the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3).

The inspectors verified that Piping and Instrumentation Diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations and the

P&IDs were documented and entered into the CAP for resolution (TI 2515/177, Section 04.02.b).

In addition, the inspectors reviewed the licensee's isometric drawings that describe the LPCI system configurations to verify that the licensee had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors considered the following related to the isometric drawings:

- High point vents were identified;
- High points that do not have vents were acceptably recognizable;
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation;
- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified;
- All pipes and fittings were clearly shown;
- The drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

The licensee indicated that, even though they possess isometric drawings of the LPCI system, they do not rely upon any isometric drawings for gas management in that system. Therefore, the inspectors were unable to verify the above considerations.

The inspectors had one observation concerning the LPCI suction lines from the Condensate Storage Tank (CST), specifically the area below the 2(3)-1501-31A(B) LPCI pump suction valves from the CST. These gate valves are on a vertical run of piping and are normally closed, such that if air were introduced into the LPCI suction header, it could accumulate underneath this valve. The licensee's Generic Letter 2008-01 evaluation of the LPCI system did not discuss this area. When asked by the inspectors, the licensee indicated that their venting procedures and lack of a source of gas intrusion prevent gas from accumulating under the valve, and they planned on revising their evaluation to include this discussion.

The inspectors were concerned about the sequence of filling and venting. The CST lines are filled and vented. Then the LPCI system is filled. The 2(3)-1501-31A(B) valves are opened to fill and vent LPCI. The air under the 2(3)-1501-31A(B) valves would then enter the CST piping. The inspectors were concerned about where that volume of air would eventually settle.

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177, which will be closed on a later inspection report.

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 1.1.1.6 & 1.1.2.6, Unit 2/3 Refueling Floor, elevation 613’;
- Fire Zone 8.2.6.A, Unit 2 Control Room Emergency Ventilation (CREVS);
- Fire Zone 6.2, Unit 2/3 Comp Room & Auxiliary Electrical Room, elevation 517’; and
- Fire Zone 11.1.3, Unit 3 HPCI [high pressure coolant injection] Pump Room, elevation 476’.

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

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On March 15, 2010, 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 one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- Unit 2 125 Volt DC Electrical; and
- Unit 2 250 Volt DC Electrical.

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 constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- Unit 3 'A' CS [core spray] when 'B' CS is OOS for bearing cooler testing;
- Unit 3 'B' CS when 'A' CS OOS for bearing cooler testing;
- 3A SBLC when 3B SBLC pump OOS for leak repair and PMT [preventative maintenance];
- 4 Year PM [preventative maintenance] inspect cubicle 3B at Bus 29 feeding MCC [motor control center] 29-7 and MCC 28-7; and
- Unit 2 125 Volt main battery modified performance test.

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 maintenance risk assessments and emergent work control 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:

- EC [Engineering Change] 378066, "Historical Operability Evaluation of 2-1452-3/4 CS Differential Pressure Piping Due to Lack of Pipe Supports;"
- EC 378387, "Historical Operability Evaluation of Main Steam Loop C Line due to Failed Snubber 2-3019C-54 (Drawing M-564G, Sheet. 9);"
- EC 377992, "Historical Operability Evaluation of 2-2305-10" HPCI Steam Line Piping Due To Degraded PWHP [pipe whip] Restraint 2-2305-G-209;"
- IR 01022325, "Leak on U3 EDG Cooling Water Flange / HX;" and
- IR 01029105, "Air Void Identified on U2 HPCI Discharge Piping Above Torus."

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 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.

These operability inspections constituted five samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification(s):

- EC 378352, "Provide Temporary Alternate Keep Fill for the Unit 3 B Loop of CCSW at the Unit 3B LPCI/CCSW."

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 the affected system. 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 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. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted one temporary 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 (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- WO 1102337-09, "OP [operations] PMT [post-maintenance test] Standby Diesel Generator 3-6601;"
- WO 1268228-06, "SEP Air Leak Test 3-1401-B CS Motor Lube Oil Cooling Coil;"
- WO 1281896, "OP D3 QTR TS 3B SLC PMP [standby liquid control pump] Test for In-Service Testing;"
- WO 1155427-21, "MM PMT Inservice Leak Inspection of Installed Vent Line;" and
- WO 1022669-01, "D2 4Y PM Test 4kV Bus 24-1 crosstie to Bus 34-1 Relays/Meters," Completed 1/22/2010.

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.

These inspections constituted five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

(1) Failure to Record the Identity of Personnel Performing Post-Maintenance Tests

Introduction: A finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," was NRC-identified for the licensee's failure to record the identity of various personnel who performed seven post-maintenance tests (PMTs) related to Unit 3 EDG maintenance.

Description: On January 28, 2010, the licensee performed seven PMTs after various Unit 3 EDG maintenance activities were completed. The PMTs were documented under the following work order tasks: WO 00658904-03, WO 01278731-02, WO 01102337-18, WO 01267208-09, WO 00928076-02, WO 01207620-02 and WO 01267208-05. The inspectors identified that the documentation, all of which were quality records, did not identify the individuals that performed these tests.

Since the PMTs were related to work on safety-related components and were activities affecting quality, the requirements under the Test Control section of the licensee's Quality Assurance Topical Report, NO-AA-10, governed the documentation of the PMTs and stated that the identity of the inspector or tester will be recorded. Further, 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," also requires the licensee to document the name of the inspector on the quality record for these PMTs.

While the licensee used MA-AA-716-012, "Post-Maintenance Testing," and DAP 15-10, "Post-Maintenance Testing Program," for process guidance on requirements and expectations related to post-maintenance testing, the inspectors determined that the documentation requirements found in 10 CFR Part 50, Appendix B and the Quality Assurance Topical Report were neither discussed in detail within MA-AA-716-012, nor DAP 15-10. Specifically, the requirement to document the tester or inspector's name was not found.

Once the inspectors questioned the licensee about the seven PMTs, the licensee wrote an issue report and performed a work group evaluation under IR 01028265, "NRC ID: Concerns with Quality Record Documentation." The work group evaluation looked at several other PMT packages, identifying similar discrepancies matching the inspector's observations. For extent of condition, the work group evaluation concluded that neither the guidance found in Exelon Corporate procedure MA-AA-716-012, "Post-Maintenance Testing," nor the station specific implementation in DAP 15-10 "Post-Maintenance Testing Program," provided clear guidance on the documentation of PMTs.

During discussions with the licensee about the significance of the violation, the licensee provided a surveillance test under work order WO 01299399-01,

“OP D3 1M TS Unit Diesel Generator Operability.” Although the surveillance test was performed separately from the seven PMTs in question, the licensee reasoned that the surveillance test showed components covered in the PMTs would support the Unit 3 EDG operability. However, while the surveillance test identified those who performed the surveillance, the identity of the original testers who performed the PMTs could not be found with 100 percent certainty, especially since the PMTs were performed over more than one shift. Further, the inspectors concluded that the steps found in the surveillance test were dissimilar from those in the work instructions of the PMTs and that the surveillance would not stand alone as an all inclusive PMT for several reasons including:

1. The PMT entitled WO 01278731-02, “OPS Check Flex Hoses for Leaks on 3 EDG Jacket Water System,” involved checking a total of 18 connections for 2 flex hoses and 7 flex couplings. Many of the flex hoses were short and could potentially be hard to spot, so the PMT used pictures to identify their locations. The inspectors concluded it was not reasonable to assume that the operators performing the surveillance would spot all 18 connections without the instructions and pictures found in the PMT work package. Further, the surveillance test did not direct operators to look for leaks in any of the tasks and was in no way linked to the PMT’s work instructions.
2. The PMT entitled WO 01207620-02, “OP-PMT Air Start Regulator on D3 EDG DOS 6600-01,” is the only PMT out of the seven that is documented as linking to the surveillance. The other six PMTs are not linked to the surveillance through the documentation. Additionally, the surveillance test had no criteria for checking the air start regulating valve for leaks as the PMT under WO 01207620-02 did. Without these instructions in the surveillance, it is reasonable to assume operators would not know to apply leak detection solution on the fittings of the air start regulator; further, with the diesel running, it is unlikely operators would have heard any air leaks.
3. Some work was done after completion of the surveillance test as evidenced by a handwritten note found within the procedure used to conduct the surveillance test stating: “will remain inop until cooling water flange bolt replacement & PMT completed.” The note was interpreted by the inspectors as meaning that at least one of the PMTs involved additional maintenance taking place after the surveillance test was complete. The inspectors concluded this note related to the PMT entitled WO 01102337-18, “PMT Cooling Water Flanges After Fastener Change,” which took place well after the surveillance was complete. Further, it was not clear if the tasks in this PMT were performed by the same individuals who performed the surveillance because this PMT was conducted on a different shift than the surveillance.

Analysis: The inspectors determined that the failure to record the identity of various personnel who performed seven PMTs is contrary to 10 CFR Part 50, Appendix B, Criterion XVII, “Quality Assurance Records,” and was a performance deficiency.

The finding was determined to be more than minor because the finding was similar to IMC 0612, Appendix E, Example 1b, in that, a part of required records were irretrievably lost since the licensee could not produce any additional procedures or logs that would conclusively identify personnel who performed seven PMTs. Further, the finding is also

similar to IMC 0612, Appendix E, Example 2h, in that multiple examples (seven out of eight samples) were identified as failures to properly implement the same regulatory requirement (in this case 10 CFR Part 50, Appendix B, Criterion XVII). Additionally, after inspector questioning, the licensee identified several additional post-maintenance testing packages with similar discrepancies and attributed this issue to unclear documentation guidance provided in MA-AA-716-012 and DAP 15-10 as noted in the licensee's work group evaluation found in IR 01028265. Given the number of issues and the fact that the procedures themselves provided unclear guidance on PMT documentation, this type of failure is indicative of a procedural inadequacy that appears to be more wide spread than the seven samples the inspector identified.

The inspectors determined the finding could not be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," since the violation had no impact on any of the cornerstones listed in the tables.

Also from IMC 0612, Appendix B, it is apparent that this issue did not fall directly under a cornerstone and that incomplete information was recorded in the seven PMTs. Because of this, the Enforcement Policy was used to screen the severity in conjunction with the IMC 0612, Appendix E, Examples 1b and 2h. From the Enforcement Policy, the finding affected the "Miscellaneous Matters" activity and involved noncompliance with NRC requirements that were not considered significant based on risk. Further, Supplement VII of the Enforcement Policy screened the severity of the violation as Severity Level IV because the violation was similar to the Severity Level IV example D.2: "Information that the NRC requires be kept by a licensee and that is incomplete and of more than minor significance." Note that the violation was also determined to be more than minor in part due to its similarity to IMC 0612 Appendix E, Examples 1b and 2h.

This finding has a cross-cutting aspect in the area of Human Performance, Resources because the licensee did not provide complete, accurate and up-to-date procedures to plant personnel. H.2(c)

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," requires, in part, that test records shall, as a minimum, identify the inspector or test data recorder.

Contrary to the above, on January 28, 2010, the licensee failed to record the identity of personnel performing seven post-maintenance tests documented in the following work order tasks: WO 00658904-03, WO 01278731-02, WO 01102337-18, WO 01267208-09, WO 00928076-02, WO 01207620-02 and WO 01267208-05. Completed corrective actions included adding PMT documentation requirements to DAP 15-10 and briefing individuals who perform PMTs. Because this violation was of very low safety significance and it was entered into the licensee's CAP as IR 01028265, "NRC ID: Concerns with Quality Record Documentation," this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000237/2010002-01; 05000249/2010002-01 - Failure to Record the Identity of Personnel Performing Post-Maintenance Tests)**

1R22 Surveillance Testing (71111.22)

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 01294923-01, "D3 QTR TS Valve Timing (IST);"
- DOP 2000-24, "Drywell Sump Operation," Revision 19 (RCS);
- WO 01297289, "D2 Wk TS 250VDC Battery Surveillance;"
- WO 01303693-01, "D2/3 1M TS Unit Diesel Generator Operability;"
- WO 01103648, "D2 5Y TS 125V STA Main Battery Modified Performance Test;"
and
- DOS 1500-08, "Discharge of Containment Cooling Service Water (CCSW) From Low Pressure Coolant Injection (LPCI) Heat Exchanger During CCSW Pump Operations," Revision 16.

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 criteria 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 frequency were in accordance with TSs, the UFSAR, 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 four routine surveillance testing samples, one inservice testing sample, and one reactor coolant system leak detection inspection sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

Failure to Follow Technical Specification 5.5.4 Implementing Procedure

Introduction: The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of Technical Specification 5.5.4 for the licensee failing to follow Steps I.2.a and b of Procedure DOS 1500-08, "Discharge of Containment Cooling Service Water (CCSW) From Low Pressure Coolant Injection (LPCI) Heat Exchanger During CCSW Pump Operations," Revision 16.

Description: To comply with Technical Specification 5.5.4, "Radioactive Effluent Controls Program," the licensee is required to sample CCSW water at the outlet of the LPCI heat exchanger (Hx) for activity prior to operating the CCSW pumps. The licensee is only required to sample every 30 days, if there is no indication of activity. The following series of events document that the licensee had indications there was positive activity found in several 3A LPCI Hx samples. Because of these positive activity samples, operations surveillance procedure DOS 1500-08 required actions, but these actions were not taken.

On December 1, 2009, the licensee sampled the CCSW (tube) side of the 3A LPCI Hx from the normal sample point for activity. The sample results were 4.541E-6 microcuries/milliliter with peaks on CO-60 and MN-54 with a maximum permissible concentration of 68 percent. No action was taken based on this sample result. The sample result was entered into the CAP as IR 1000386. Surveillance Procedure DOS 1500-08, Step I.2. required that, if a sample activity result exceeded 1.5E-6 microcuries/milliliter, then DOS 1500-09, "LPCI Heat Exchanger Tube Leak Test," must be performed within 24 hours. This test was not performed.

On December 4, 2009, the licensee again sampled the CCSW (tube) side of the 3A LPCI Hx from the normal sample point for activity. The results were 8.276E-6 microcuries per milliliter, with peaks on ZN-65 and MN-54, with a maximum permissible concentration of 125 percent. No action was taken based on this sample result. Surveillance Procedure DOS 1500-08, Step I.2 a. required that, if a sample activity result exceeded 100 percent maximum permissible concentration, then notify the Operations Shift Supervisor and perform Calculated CCSW Sample Activity Limit and Canal Activity Calculations. The sample was neither logged in the chemistry log, nor the operations log, nor was it entered into the CAP. The activity calculations were not performed.

On December 11, 2009, the licensee sampled the CCSW (tube) side of the 3A LPCI Hx for activity again. This time the sample was taken from the Hx vent. The sample results showed no activity. This was documented in IR 1004294.

On December 14, 2009, the licensee ran the 3A and 3D CCSW pumps. The 3A pump causes flow through the 3A LPCI Hx. The operations log stated that the sample requirements of DOS 1500-08 were waived because the latest sample results showed no activity in the water.

On December 29, 2009, the licensee again sampled the CCSW (tube) side of the 3A LPCI Hx for activity. The result from the normal sample point was 1.0E-6 microcuries/milliliter with peaks on CO-60 and MN-54 with a maximum permissible concentration of 16 percent. The Operations Log showed that a resample was taken from the Hx vent with no activity identified.

On January 4, 2010, IR 1012242, "3A LPCI Hx Vent Valve On Wrong Side of Hx Head," documented that the samples taken on December 11, 2009, and December 29, 2009, were drawn from the head vent which was upstream of the Hx, a location that would not yield an activity result even if a tube leak existed.

On January 12, 2010, the Illinois State Emergency Management Agency (IEMA) representative at Dresden questioned the LPCI Hx sample results, which were documented in IR 1016212, "IEMA Questioned 3A LPCI Hx Activity Results."

On January 21, 2010, the inspectors reviewed the documentation collected by the IEMA representative and discussed the sample results with the Chemistry Manager. The inspectors stated that, based on the existing documentation, there was no evidence that there was not a tube leak in the 3A LPCI Hx and that the tube leak test, DOS 1500-09, "LPCI Heat Exchanger Tube Leak Test," should have been performed by December 3, 2009. The Chemistry Manager agreed with the inspectors conclusions. On January 22, 2010, the inspectors discussed the issue with activity in the 3A LPCI Hx exchanger with the Shift Operations Supervisor, who also agreed with the inspectors' conclusions, and stated that the 3A LPCI Hx would be sampled from a new approved sample point before the CCSW pumps were run again.

The licensee sampled from a downstream point at valve 3-1501-78A on January 22, 2010, and found no activity. The inspectors reviewed the location of the sample point and agreed it was representative of the desired information.

There were several reasons for this problem. The normal sample point for the 3A LPCI Hx also shares a line with the floor drain system. The floor drain system is known to be contaminated. The licensee speculated that the source of the contamination was the floor drain system with no valid proof. Licensee personnel based their actions on this speculation. One alternate sample point was plugged. Another alternate sample point was from a location that was not representative of the volume of water that needed to be sampled. Communications between operations and chemistry were poor or non-existent. Sample results were not always logged in the Chemistry Log or the Operations Log. The surveillance procedure DOS 1500-08 had confusing criteria. The sample results could exceed the requirements to perform a tube leak test yet not require another sample prior to running CCSW.

Analysis: The inspectors determined that the failure to perform a tube leak test or perform Calculated CCSW Sample Activity Limit and Canal Activity Calculations was contrary to DOS 1500-08, "Discharge of Containment Cooling Service Water (CCSW) From Low Pressure Coolant Injection (LPCI) Heat Exchanger During CCSW Pump Operations," Revision 16, and was a performance deficiency.

The finding was determined to be more than minor because the finding, if left uncorrected, would become a more significant safety concern. Specifically, had there been an actual LPCI Hx tube leak radioactivity could have been released. The inspectors concluded this finding was associated with the Barrier Integrity 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 Containment Barrier Cornerstone. All four questions on this table were answered "no." There was no actual degradation of the containment barrier. Therefore, the issue screened as Green.

This finding has a cross-cutting aspect in the area of Human Performance, Decision Making because the licensee did not demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it was unsafe in order to disapprove the action. Specifically, the licensee assumed the activity in the sample was coming from the floor drain system with no valid proof that was the case. H.1(b)

Enforcement: Technical Specification Section 5.5.4," Radioactive Effluent Controls Program," states, in part, that the program conforms to 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to members of the public from radioactive effluents as low as reasonably achievable. The program contained in the Offsite Dose Calculation Manual (ODCM), shall be implemented by procedures, and shall include remedial actions to be taken whenever the program limits are exceeded. The licensee established procedure DOS 1500-08, "Discharge of Containment Cooling Service Water (CCSW) From Low Pressure Coolant Injection (LPCI) Heat Exchanger During CCSW Pump Operations," Revision 16 as an implementing procedure for Technical Specification Section 5.5.4.

Surveillance procedure DOS 1500-08, Step I.2. required that, if a sample activity result exceeded 1.5E-6 microcuries/milliliter, then DOS 1500-09, "LPCI Heat Exchanger Tube Leak Test," must be performed within 24 hours.

Surveillance procedure DOS 1500-08, Step I.2 a. required that, if a sample activity result exceeded 100 percent maximum permissible concentration, then notify the Operations Shift Supervisor and perform Calculated CCSW Sample Activity Limit and Canal Activity Calculations.

Contrary to the above:

On December 1, 2009, the licensee sampled the CCSW (tube) side of the 3A LPCI Hx from the normal sample point for activity. The sample results were 4.541E-6 microcuries/milliliter. No action was taken based on this sample result. The sample was

entered into the CAP as IR 1000386. The tube leak test required by DOS 1500-09, Step I.2.a was not performed.

On December 4, 2009, the licensee again sampled the CCSW (tube) side of the 3A LPCI Hx from the normal sample point for activity. The sample results were 8.276E-6 microcuries per milliliter with a maximum permissible concentration of 125 percent. No action was taken based on this sample result. The sample was neither logged in the chemistry log, nor the operations log, nor was it entered into the CAP. The activity calculations were not performed. The tube leak test required by DOS 1500-09, Step I.2.a was also not performed. The licensee's corrective actions included a change to DOS 1500-08 to ensure personnel do not waive performance of the test procedure until tube leak checks are considered during non-routine samples of CCSW and revising the chemistry sampling procedure CY-DR-110-220, "LPCI Service Water (CCSW) and Torus Water Sampling," to notify operations to evaluate performance of a tube leak check if activity exceeds 1.5E-6 microcuries/milliliter. Because this violation was of very low safety significance and it was entered into the licensee's CAP as IR 1016212 this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (**NCV 05000237/2010002-02; 05000249/2010002-02- Failure to Follow Technical Specification 5.5.4 Implementing Procedure**).

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors held discussions with Emergency Preparedness (EP) staff regarding the operation, maintenance, and periodic testing of the Alert and Notification System (ANS) in the Dresden Nuclear Power Station's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and siren test failure records from January 2008 through December 2009. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This alert and notification system inspection constituted one sample as defined in IP 71114.02-05.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

.1 Emergency Response Organization Augmentation Testing

a. Inspection Scope

The inspectors reviewed and discussed with plant Emergency Preparedness (EP) staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on shift ERO as well as the provisions for maintaining the ERO emergency telephone book. The inspectors also reviewed reports and a sample of corrective action program records of unannounced off hour augmentation tests, which were conducted from January 2008 through December 2009, to determine the adequacy of post-drill critiques and associated corrective actions. The inspectors reviewed the EP training records of a sample of approximately 40 ERO personnel assigned to key and support positions to determine the status of their ERO position training. Documents reviewed are listed in the Attachment to this report.

This emergency response organization augmentation testing inspection constituted one sample as defined in IP 71114.03-05.

b. Findings

No findings of significance were identified.

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

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, no emergency plan or emergency action level changes were implemented.

No sample was evaluated because the opportunity to apply the procedure as defined in IP 71114.04-05 was not available.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

.1 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspectors reviewed a sample of the Nuclear Oversight staff's 2008 and 2009 audits of the Dresden Nuclear Power Station emergency preparedness program to determine if the independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed critique reports and samples of corrective action program records associated with the 2009 biennial exercise, as well as various EP drills conducted in

2008 and 2009, in order to determine that the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns. Additionally, the inspectors reviewed a sample of corrective actions related to the EP program and activities to determine whether corrective actions were completed in accordance with the site's corrective action program. Documents reviewed are listed in the Attachment to this report.

This correction of emergency preparedness weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05)

.1 Inspection Planning and Identification of Instrumentation (02.01)

a. Inspection Scope

The inspectors reviewed the plant's Final Safety Analysis Report (FSAR) to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, radioactive effluents, materials/articles, and workers. The inspectors identified the instrumentation and the associated Technical Specification requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors obtained a listing of in-service radiological instrumentation including air samplers and small article monitors (SAMs), along with instruments used to detect and/or analyze worker external and internal contamination such as personnel contamination monitors (PCMs), portal monitors (PMs) and whole body counters (WBCs). The list was reviewed to determine whether the licensee had an adequate number and type of instruments to support plant operations.

The inspectors reviewed licensee and third-party independent evaluation reports of the radiation monitoring program since the last inspection, including an audit of the Exelon offsite calibration facility, to identify the scope and magnitude of any deficiencies within the program.

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions including instruments used for underwater surveys. Procedure adequacy was evaluated relative to industry and regulatory standards.

The inspectors reviewed area radiation monitor and effluent radiation monitor setpoint values and their bases to assess consistency with the FSAR and Offsite Dose Calculation Manual (ODCM).

This inspection constituted one sample as defined in IP 71124.05.

b. Findings

No findings of significance were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down the following effluent radiation monitoring systems (liquid and airborne systems):

- Common Chimney SPING Monitoring System (and its backup);
- Unit 2 and Unit 3 Service Water Monitors;
- Common River Discharge Monitor; and
- Common Reactor Building Vent SPING Monitoring System.

The inspector's assessed overall material condition and determined whether system configurations aligned with ODCM descriptions.

The inspectors selected approximately ten portable survey instruments during the inspection to determine if calibration and source checks were current, and to assess instrument material condition and functionality. The inspectors observed licensee staff demonstrate source checks for various types of portable survey instruments including high-range instruments to verify whether checks were performed for all instrument scales intended for use.

The inspectors walked down six area radiation monitors (ARMs) and two continuous area monitors (CAMs) to determine whether they were appropriately positioned relative to the areas they were intended to monitor and/or they sampled air from representative locations. The inspectors selectively compared monitor response via local or remote indications with actual area conditions.

The inspectors selected several PCMs, PMs, and SAMs and determined if the periodic source checks were performed in accordance with the manufacturer's recommendations and the licensee's procedures.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing Program (02.03)

.01 Process and Effluent Monitors

a. Inspection Scope

The inspectors selected four point-of-discharge effluent monitoring systems (gaseous and liquid effluent monitors and flow monitors) and reviewed calibration data to determine if channel calibration and functional tests performed since the last inspection

met Radiological Effluent Technical Specifications (RETS)/ODCM. The inspectors determined whether: (1) the licensee calibrated its monitors with National Institute of Standards and Technology (NIST) traceable sources; (2) primary calibrations, if applicable, used sources that adequately represented the plant nuclide mix; (3) secondary calibrations verified the primary calibration; and (4) channel calibrations encompassed instrument alarm set-points. Additionally, inspectors verified that effluent monitor alarm set-points were established as provided in the ODCM and the licensee's procedures, and that any changes to effluent monitor set-points since the last inspection were justified.

b. Findings

No findings of significance were identified.

.02 Laboratory Instrumentation

a. Inspection Scope

The inspectors selected laboratory analytical instruments used for radiological analysis including gamma spectroscopy high purity germanium (HPGe) detection systems, proportional counters and liquid scintillation counters (LSC). For the instruments selected, the inspectors determined whether periodic performance checks and calibration data demonstrated adequate instrument performance consistent with industry standards.

b. Findings

No findings of significance were identified.

.03 Whole Body Counter (WBC)

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform WBC operational checks before daily use of the instrument and determined whether check source(s) aligned with the plant's isotopic mix. The inspectors also reviewed the most recent WBC calibration data to determine if calibration sources were representative of the plant source term, if appropriate calibration phantoms were used, and instrument performance was satisfactory.

b. Findings

No findings of significance were identified.

.04 Post-Accident Monitoring Instrumentation

a. Inspection Scope

The inspectors selected all four drywell high-range radiation monitors, reviewed the calibration documentation, and determined if an electronic calibration was completed for all range decades above 10 rem/hour. The inspectors verified that at least one decade at

or below 10 rem/hour was calibrated using an appropriate radiation source. The inspectors reviewed the calibration acceptance criteria to determine if it was adequate given the measuring range and intended purpose of the instrument.

The inspectors selected two high-range effluent monitors relied upon by the licensee in their emergency operating procedures (EOPs) as a basis for triggering emergency action levels and subsequent emergency classifications, and evaluated the calibration and availability of these instruments. In addition, the inspectors reviewed the licensee's capability to collect post-accident iodine effluent samples.

The inspectors assessed the licensee's actions relative to its regulatory commitment to maintain contingency plans for obtaining highly radioactive samples of reactor coolant, suppression pool, and drywell atmosphere in response to Technical Specification Amendments No. 197/190, issued in March 2003. The amendments deleted the post-accident sampling system from technical specifications provided that plant-specific verifications were completed and specified regulatory commitments were maintained.

b. Findings

Introduction: The inspectors identified a finding of very low safety-significance (Green) for the failure to meet a regulatory commitment to maintain a contingency plan for obtaining highly radioactive samples of reactor coolant, suppression pool, and drywell atmosphere for purposes of post-accident recovery assessment planning.

Description: In 2003, the Dresden Station Operating Licenses were amended to delete technical specification requirements for post-accident sampling and thereby eliminate the requirement to maintain a post-accident sampling system that could obtain samples of reactor coolant, suppression pool (torus), and drywell atmosphere in a prompt manner. The NRC's Safety Evaluation Report (SER) associated with the licensing action indicated that it was not necessary to maintain dedicated equipment to promptly obtain samples to support emergency response decision-making during initial phases of an accident because other indications of process parameters and radiological conditions were available. However, the SER indicated that knowledge of radioisotopes existing in the core post-accident was of significant benefit in order to address public concerns and to develop plans for long-term recovery operations. Consequently, as part of the licensing action and as provided in the SER, the licensee committed to maintain a contingency plan for obtaining highly radioactive samples of reactor coolant, suppression pool, and drywell atmosphere. The contingency plan was to be contained within plant procedures. The license amendment and the contingency plan commitment were effective beginning September 2003.

In 2008, the licensee developed a contingency plan in the form of a chemistry procedure, CY-DR-150-8900, "Annual HRSS Contingency Capability Plan Verification." The current revision (Revision 1, effective May 2008) of the contingency plan called for: (1) continued use of the station's high radiation sampling system (HRSS) equipment to obtain the necessary samples in support of post-accident recovery phase activities; (2) performance of an annual surveillance to demonstrate HRSS functionality; and (3) maintenance of the HRSS equipment in a readiness condition such that repairs, if warranted, could be completed within two weeks of an accident declaration. The annual surveillances were intended to demonstrate that HRSS equipment could obtain liquid

samples from four different specified pathways and air samples at two different plant locations for both Unit 2 and Unit 3.

In November 2009, the HRSS surveillance was attempted but not completed because none of the liquid samples from either unit could be obtained due primarily to equipment problems. The inspectors discovered that since approximately 2006, the licensee had identified a variety of HRSS equipment problems that delayed the surveillance completion time-frame beyond two weeks. For example, the surveillance was completed in 2008, between October 13 and December 8. The licensee developed condition reports to document the problems and work orders were generated to trouble-shoot and repair the equipment. However, some of the equipment was not repaired timely as problems continued for several years. The licensee did not evaluate the impact of these problems relative to its regulatory commitment to maintain the equipment in a two-week readiness condition following the failed surveillance in 2009, and the completion of protracted surveillances in preceding years. Consequently, the licensee failed to meet its regulatory commitment to maintain a contingency plan.

Subsequent to the February 2010 onsite inspection, the licensee demonstrated that the HRSS system could obtain the necessary samples despite long-standing ventilation system flow issues for Unit 2 and more recent sample chiller problems for Unit 3. Corrective actions were being developed to ensure its contingency plan commitments would be met in the future. These actions included a means to enhance system ownership and the establishment of an effective process for HRSS equipment maintenance and repair at a priority consistent with the intended use of the equipment for accident recovery planning.

Analysis: The inspectors determined that the failure to meet the regulatory commitment to maintain a contingency plan for obtaining highly radioactive samples of reactor coolant, suppression pool and the drywell atmosphere represents a performance deficiency as defined in NRC Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The inspectors concluded that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct and should have been prevented.

The finding was not subject to traditional enforcement since the issue did not have a significant or potentially significant-safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

In accordance with IMC 0612, the inspectors determined that the finding was more than minor because it impacted the facilities and equipment attribute of the Emergency Preparedness Cornerstone and adversely affected the cornerstone objective of ensuring the capability to implement adequate measures to protect health and safety of the public in the event of a radiological emergency. Specifically, equipment intended to safely obtain highly radioactive samples that are used to assess reactor core condition as part of post-accident recovery planning was not demonstrated or otherwise evaluated to be in a readiness condition consistent with the licensee's contingency plan. The finding was assessed using the Significance Determination Process (SDP). Since the finding involved equipment to support the licensee's Emergency Plan, the inspectors utilized IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," to assess its significance.

The inspectors determined that the finding resulted in a failure to meet a regulatory commitment to maintain equipment that supplements Part II, Section M, "Re-entry and Recovery Planning," of the Exelon Standardized Emergency Plan (EP-AA-1000) and Section 5.2.3 "Onsite Process Monitors" of the Dresden Emergency Plan Annex (EP-AA-1004). Given that the HRSS equipment supports emergency response activities as provided in the regulatory commitment, it is equipment associated with the planning standard of 10 CFR 50.47(b)(8). The finding was determined to be of very low safety-significance because it involved a planning standard problem associated with demonstrating equipment readiness. The finding was determined to be associated with a cross-cutting aspect in the area of human performance in the resources component, in that, the licensee failed to ensure that equipment which supports its emergency plan was demonstrated to meet a defined status of operational readiness (H.2.d).

Enforcement: Enforcement action does not apply because the performance deficiency did not involve a violation of regulatory requirements. The issue was entered into the licensee's CAP (apparent cause evaluation (ACE) no.10-30511). Corrective actions are as described above. **(FIN 05000237/2010002-03; 05000249/2010002-03 - Failure to Meet Regulatory Commitment to Maintain Contingency Plans for Post-Accident Sampling).**

.05 Portal Monitors, Personnel Contamination Monitors and Small Article Monitors

a. Inspection Scope

The inspectors selected at least one PM, PCM and SAM used onsite and determined if instrument alarm set-point values met regulatory guidance, consistent with industry practices, to ensure that licensed materials are not released from the site. The inspectors reviewed the calibration documentation for each of the instruments selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

b. Findings

No findings of significance were identified.

.06 Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimeters, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors determined if calibration documentation for several portable survey instruments, ARMs, electronic dosimetry and air samplers or CAMs. Calibration methods and detector measurement geometry, as applicable, were reviewed.

The inspectors determined if the licensee took appropriate corrective action for instruments that failed to meet calibration acceptance criteria. For those failed instruments, the inspectors verified that the licensee evaluated the possible consequences of instrument use since the previous successful calibration or source check.

b. Findings

No findings of significance were identified.

.07 Instrument Calibrator

a. Inspection Scope

The inspectors reviewed the current output values for the licensee's portable survey instrument calibrator unit. The inspectors determined if the licensee periodically measured calibrator output over the range of the instruments intended use through ion chamber/electrometer devices or equivalent measurement devices. Additionally, the inspectors determined if the measuring devices were calibrated by a facility using NIST traceable sources and that correction factors for these devices were properly applied by the licensee.

b. Findings

No findings of significance were identified.

.08 Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term and determined that calibration sources used for instrument calibrations and functionality checks were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors determined if problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were adequately addressed in the licensee's CAP. Additionally, the inspectors reviewed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee in its CAP that involved radiation monitoring instrumentation.

The inspectors reviewed CAP reports related to exposure significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area. 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.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator (PI) for Unit 2 and Unit 3 for the period from the first quarter 2009 through the fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection Reports for the period of January 2009 through January 2010 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 unplanned scrams per 7000 critical hours samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications performance indicator for Unit 2 and Unit 3 for the period from the first quarter 2009 through the fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs,

issue reports, event reports and NRC Integrated Inspection Reports for the period of January 2009 through January 2010 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 unplanned scrams with complications samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours performance indicator for Unit 2 and Unit 3 for the period from the first quarter 2009 through the fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports and NRC Integrated Inspection Reports for the period of January 2009 through January 2010 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 unplanned transients per 7000 critical hours samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 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 third quarter 2009 through the fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the 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 July 2009

through January 2010 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.

.5 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled the licensee performance indicator (PI) submittals for Drill/Exercise Performance for the period from the first quarter 2009 through fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance were used as contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5. The inspectors verified the accuracy of the number of reported drill and exercise opportunities and the licensee's critiques and assessments for timeliness and accuracy of the opportunities. The inspectors reviewed the licensee's documentation for control room simulator training sessions, the 2009 biennial exercise, and other designated drills to validate the accuracy of the submittals. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one drill/exercise performance sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.6 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled the licensee submittals for the Emergency Response Organization (ERO) Drill Participation PI for the period from the first quarter 2009 through the fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance were used as contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5. The inspectors reviewed the licensee's records and ERO roster to validate the accuracy of the submittals for the number of ERO members assigned to fill key positions and the percentage of ERO members who had participated in a performance enhancing drill or exercise. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one ERO drill participation sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.7 Alert and Notification System

a. Inspection Scope

The inspectors sampled the licensee submittals for the Alert and Notification System (ANS) PI for the period from the first quarter 2009 through fourth quarter 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance were used as contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5. The inspectors reviewed the records of the licensee's reported number of successful siren operability tests as compared to the number of siren tests conducted during the reporting period to validate the accuracy of the submittals. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one ANS sample 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 Corrective Action Program (CAP)

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify 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 Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-Up Inspection: Channel Distortion Testing

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item 856480, "Unit 3 B-04 Troubleshooting Results – Possible Channel Bow," documenting potential channel distortion on some Unit 3 control rods. The inspectors interviewed licensed operators and reactor engineers, reviewed a 10 CFR Part 21 report issued by General Electric, and reviewed several procedures and surveillance test results documented in the List of Documents Reviewed section of this report.

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

b. Findings

The inspectors determined that the issue was properly identified when it arose, the surveillance data had been conservatively evaluated, and the corrective actions were commensurate with the problems identified.

No findings of significance were identified.

.4 Closed URI 05000237/2009004-01; 05000249/2009004-01; "Significance of Potentially Submerged Safety and Nonsafety-related Low Voltage Power and Control Power Cables"

a. Inspection Scope

The inspectors reviewed the URI and selected issue reports. The inspectors interviewed licensee design engineering personnel.

a. Findings

Introduction: The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, licensee personnel failed to maintain safety-related cables in underground manholes from becoming repeatedly submerged, which resulted in subjecting the cables to an environment for which they were not qualified.

Description: On August 12, 2009, the inspectors walked down the 2/3 cribhouse, the Unit 3 cable tunnel, and the cable tunnels that lead from Units 2 and 3 out to the 345 kv offsite power switchyard to determine if cables were submerged.

The inspectors determined that low voltage (600 v) nonsafety-related control power cables that lead from the power block out to the 345 kv offsite power switchyard are routinely submerged. The inspectors also determined that the safety-related power cables for the U3 diesel generator cooling water pump were installed in a condition that was routinely submerged. The licensee documented the inspector's observations in IR 975308, "NRC Concerns on Submerged Electrical Cables."

The licensee could find no documentation that the cables were designed to be submerged. Each cable was 3/c-#4/0 (600vAC rated) with Ethylene Propylene Rubber (EPR) insulation and Neoprene (N) jacketing per Cable Tabs drawings 12E-3902X and 12E-3902Z. The licensee did find documentation that the cables were designed for a wet environment.

The nonsafety-related control power cables to the 345 kv switchyard were clearly submerged routinely. These cables were not normally energized so a cable fault might go undetected. The inspectors were unable to identify any NRC or industry guidance that would have caused the licensee to take corrective action to remove the water from the vaults or test the insulation on these low voltage cables.

The U3 EDG cooling water pump safety-related cable was in a conduit that was designed to leak water back to the U3 cable tunnel. The conduit was sealed inside the U3 cable tunnel and water was leaking through gaps in the seal. This led the inspectors to conclude that the conduit, at times, was filled with water and that the cable was submerged at least part of the year. The inspectors identified that the seal on the conduit was not per design. The licensee's drawings showed a seal on only one conduit in the group in the U3 cable tunnel, but all the conduits were sealed. The licensee generated work order (WO) 01271108 on September 24, 2009, to remove the seals.

Even though the cables were repeatedly being submerged, the inspectors concluded that there was not an immediate operability concern for the U3 EDG cooling water pump. Although the licensee performed no specific testing on the cable insulation, the cable insulation is tested indirectly during the bi-weekly U3 EDG cooling water pump starts.

Analysis: The inspectors determined that the failure to maintain safety-related cables for the U3 EDG cooling water pump in an environment for which they were designed was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance and

affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to maintain safety-related cables for the U3 EDG cooling water pump in an environment for which they were designed when the cables were allowed to be submerged in an underground conduit.

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 Mitigating Systems Cornerstone. The finding was of very low safety significance because it was a qualification deficiency that did not result in a loss of operability. The inspectors concluded that there was not a cross-cutting issue associated with this violation.

Enforcement: The Code of Federal Regulations (CFR), Title 10, Part 50, Appendix B, Criterion III "Design Control," requires, in part, that measures be established to ensure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, the inspectors identified that the seal on the conduit for the safety-related U3 EDG cooling water pump cable was not per design. The licensee's drawings (12E-3018, Revision AP) showed a seal on only one conduit in the group in the U3 cable tunnel, but the inspectors observed that all the conduits were sealed. As a result, from the time of original construction until the present, the licensee failed to maintain the safety-related U3 EDG cooling water pump cable in an environment for which it was designed, in that, the cables were not designed to be submerged. Specifically, the U3 EDG cooling water pump safety-related cable was in a conduit that was designed to drain water back to the U3 cable tunnel. However, the conduit was sealed inside the U3 cable tunnel and water was leaking through gaps in the seal. This led the inspectors to conclude that the conduit, at times, was filled with water and that the cable was submerged at least part of the year.

As corrective action, the licensee generated work order (WO) 01271108 on September 24, 2009, to remove the seals. As of February 25, 2010, the work order was still in the planning stage, so there was no scheduled completion date for the seals to be removed and the conduit drained of water.

Because this finding was of very low safety significance, and it was entered into the licensee's CAP as IR 975308, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy.

(NCV 05000237/2010002-04; 05000249/2010002-04 - Significance of Potentially Submerged Safety and Nonsafety-related Low Voltage Power and Control Power Cables). Unresolved Item (URI) 05000237/2009004-01; 05000249/2009004-01 is closed.

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

.1 (Closed) URI 05000249/2009005-10; Electro-Hydraulic Control (EHC) Fluid Leaking From Stop Valve 3-5699-MSV4-FA Resulting in Forced Outage D3F49

a. Inspection Scope

The inspectors reviewed the plant's response to an EHC leak on Dresden Unit 3 that caused the unit to come offline in November 2009.

b. Findings

Introduction: The inspectors identified an unresolved item in Inspection Report 05000247/2009005 regarding the regulatory requirements associated with the circumstances surrounding the manual Unit 3 turbine trip on November 6, 2009. The inspectors determined that the cause of the failure of the Unit 3 Main Turbine Stop Valve (MSV) # 4 fast acting solenoid valve was a self-revealed finding of very low safety significance. This finding did not result in a violation of regulatory requirements.

Description: On November 5, 2009, at 8:53 p.m., Unit 3 Control Room received the following alarm: 903-7 B-6, EHC RESERVOIR LVL HI/LO (reference IR 989641) indicating a rate of change in the EHC reservoir at 1.3" in 100 hrs or greater. A non-licensed operator (NLO) was dispatched to stage a barrel of EHC fluid for addition. Preparations were made for a heater bay entry to look for leaks.

A Unit 3 heater bay entry was made and it was determined that the MSV # 4 had an EHC leak from the fast-acting solenoid valve (3-5699-MSV4-FA). The leak was determined to be approximately 4-5 gallons of fluid per hour. Between 12:50 a.m. and 3:43 a.m. on November 6, 2009, the licensee added two barrels of EHC fluid to the EHC reservoir.

On November 6, 2009, between 9:00 a.m. and 2:00 p.m., licensee management conducted meetings regarding the repair of the leak on MSV #4. The plan called for starting to down power Unit 3 to 650 Mwe for a planned 3:00 p.m. entry into the heater bay to repair the valve. The decision was made to go to 650 Mwe in order to reduce the dose rate in the area and extend stay time for the repair.

At approximately 3:00 p.m., while staging for entry to repair the leak, Operations personnel informed the NLO, staged to isolate the oil supply to the leaking valve, that level in the EHC reservoir was dropping quickly, and requested the NLO to enter the pipeway as soon as possible.

At approximately 3:05 p.m., the NLO observed oil spraying profusely from the bottom area of #4 Main Stop Valve and the area of the solenoid that was going to be changed out. The NLO immediately contacted the control room to report what was observed and a decision was made to take the turbine offline. At 3:32 p.m., after reactor power was reduced, the Unit 3 Turbine was manually tripped.

The inspectors reviewed Root Cause Report (RCR) 989733. The licensee determined that the wrong o-ring had been used in the fast acting solenoid valves for all the turbine control valves since 1983. The o-ring was too large for the space it occupied. This was

determined to be the root cause. A contributing cause was the solenoid mounting bolts were too long. The bolts were found to be tight but were out of thread.

Analysis: The inspectors determined that the use of o-rings, GE part number U472X000B906, in U3 turbine control valve fast acting solenoids was contrary to Vendor Technical Information Program Binder D1180, General Electric Steam Turbine Generator (GEK5551), Tab 8, GE drawing 115D2402 (Revision 12) and GE Technical Information Letter (TIL) 1594, dated November 30, 2007, which required the use of o-rings, GE part number U472X000BS906, and was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Initiating Events cornerstone attribute of procedure quality and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability. Specifically, WO 540360-01, replaced all 28 solenoid valves on turbine control valves during the Unit 3 refueling outage in November 2008, with instructions to use the wrong o-rings.

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 Events Cornerstone. The EHC leakage caused by one or more failed o-rings could have resulted in a turbine trip and reactor scram. However, the failure would not affect mitigating equipment or functions so the finding screened as having very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience because the licensee did not implement and institutionalize Operating Experience (OE) through changes to station processes, procedures, equipment, and training programs. Specifically, in RCR 989733, the licensee stated that OE 25556, (Browns Ferry Unit 3 experienced a low level in the main turbine electro-hydraulic control fluid reservoir and a manual scram was initiated in accordance with station procedures) was not effectively reviewed. In addition, GE put out Technical Information Letter (TIL) 1594, "EHC Actuator Fast Acting Solenoid Valve Mounting Kit Upgrade," as a result of the Browns Ferry reactor scram. The RCR 989733, stated that the TIL was also improperly reviewed. Had these Operating Experience documents been effectively reviewed the correct o-ring could have been installed during the U3 refueling outage which would have prevented the leak. P.2(b)

Enforcement: Per Work Order 540360-01, which replaced all the fast acting solenoids on turbine control valves during the 2008 U3 refueling outage, the work was nonsafety-related. Therefore, there was no violation of regulatory requirements. The licensee's corrective actions included revising maintenance procedure DEP 5600-01, Main Turbine Valve Solenoid and Servo Maintenance to incorporate the actions described in TIL 1594. The licensee did not determine that the o-rings were defective until after both this Unit 3 forced outage and the Unit 2 November 2009 refueling outage were complete. Therefore, one corrective action was to write a work order to change the o-rings on the solenoids for both units. Therefore, both units are still vulnerable to a similar failure until the o-rings are replaced. In addition, corrective actions were put in place to address weaknesses in the evaluation of Operating Experience. The licensee addressed this issue in the CAP under Issue Reports 899829 and 989733.

(FIN 05000249/2010002-05 - Electro-Hydraulic Control (EHC) Fluid Leaking From Stop Valve 3-5699-MSV4-FA Resulting in Forced Outage D3F49) URI 05000249/2009005-10 is closed.

.2 (Closed) Licensee Event Report (LER) 05000237/2009-005-00, "Unit 2 Reactor Recirculation Drain Line Pressure Boundary Leakage"

The event described in LER 237/2009-005-00 occurred on November 3, 2009, when the licensee was performing a containment walkdown as part of the ongoing refueling outage. During the walkdown, the licensee identified a through-wall leak on the 1" above seat drain line from the 2B Reactor Recirculation Pump discharge valve. This kind of leakage is classified as reactor pressure boundary leakage and is not allowed by the licensee's Technical Specification in Modes 1, 2, or 3. Unit 2 was in Mode 4 at the time. The licensee performed an equipment apparent cause evaluation and determined that the leak was caused by fatigue cracking of the pipe due to periods of increased vibration in the reactor recirculation pumps combined with a vibration-susceptible configuration of the above seat drain line isolation valves. Although General Electric (GE) had issued Services Information Letter (SIL) 512 in 1990 to notify GE BWR owners of the potential vibration stresses on small bore lines in the reactor recirculation system, the licensee did not take this operating experience into consideration when they put the drain line in this configuration in 2003. To correct this, the licensee cut off the valves as recommended in SIL 512 to eliminate the susceptibility to vibration and welded a cap on the remaining stub pipe. The enforcement aspects of this finding are discussed in Section 4OA7.

This event follow-up review constituted one sample as defined in IP 71153-05. This LER is closed.

.3 (Closed) Licensee Event Report (LER) 05000237/2009-007-00; 05000249/2009-007-00, "Reactor Protection System Nonconformance to a Design Standard"

On October 30, 2009, while Unit 2 was in a refueling outage, the licensee identified that the reactor protection system (RPS) pressure switches PS 2-0504-A, -B, -C, and -D all shared a common sensing line with a single isolation valve. Issue Report 986676 documented that this single point vulnerability was not in accordance with the Updated Final Safety Analysis Report (UFSAR) Section 7.2, "Reactor Protection Trip System," system requirements and that no exemption existed from the Institute of Electrical and Electronics Engineers (IEEE) IEEE-279 – 1968, "Proposed IEEE Criteria for Nuclear Power Plant Protection Systems." However, the initial issue report reviews incorrectly determined that the issue was administrative in nature and reportability was not required.

After further review, the licensee concluded that the Technical Specification RPS scram functions for turbine stop valve closure (RPS function 8) and turbine control valve fast closure - trip oil pressure low (RPS function 9) were susceptible to a single point vulnerability due to this design nonconformance. On November 20, 2009, Issue Report 996586 was written to document this condition adverse to quality and to address the identical as-found condition in Unit 3, which was operating at that time. The licensee's subsequent operability determination concluded the safety function remained operable, but was nonconforming, and additional compensatory measures were established for Unit 3.

The licensee took actions to restore compliance to the referenced design standard prior to the return to service of Unit 2 from the refueling outage, thereby correcting the condition. The licensee planned actions to restore compliance to Unit 3 during the next refueling outage in 2010. The cause of the field installation error for the common sensing line was indeterminate, as the licensee established that the pressure switches were connected to the common sensing line during initial plant construction. A licensee-identified violation is documented in Section 4OA7.1 of this report. The inspectors reviewed the licensee's corrective actions. The inspectors had no issues with the licensee's corrective actions and determined that they were completed or had an acceptable time table for completion.

This event follow-up review constituted one sample as defined in IP 71153-05. This LER is closed.

.4 (Closed) LER 05000237/2009-008-00, "Unit 2 Core Spray Break Detection Instrument Line not Seismically Supported"

On November 3, 2009, during a refueling outage walk down of the U2 drywell, plant personnel discovered that a small bore pipe was not connected to two of its supports. Additionally, there was a third pipe support that was determined to be missing. The three-quarter inch line was connected to the core spray injection line near the reactor vessel wall. The unsupported line was identified to be the core spray system line break detection for the 2B core spray pump injection line. This line was connected to the core spray injection line between the core spray injection manual isolation valve and the reactor vessel nozzle. The licensee determined that in the event of a design basis earthquake, there was a potential for the instrument line to fail, which may have resulted in an unisolable three-quarter inch piping leak from the reactor vessel. This condition represented a serious degradation to a principal safety barrier of the nuclear power plant and was reported in accordance with 10 CFR 50.73(a)(2)(ii)(A).

The inspectors identified a performance deficiency in that the as-found condition of the piping did not meet the operability criteria established in NES-MS-03.2, "Evaluation of Discrepant Piping and Support Systems." The inspectors determined that this issue was more than minor because, if left uncorrected, it could have resulted in a more significant safety concern. The impact of the finding was that a seismic event could have resulted in the failure of the core spray differential pressure line which would cause a seismically-induced small loss of coolant accident (LOCA) event with the possible unavailability of the "B" core spray train. The cause of the removal of the pipe supports was indeterminate.

The inspectors reviewed the corrective actions in IR 1002474 and LER 05000237/2009-008-00 and no additional findings were identified. This licensee-identified finding involved a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." The enforcement aspects of this finding are discussed in Section 4OA7.2 of this report.

This event follow-up review constituted one sample as defined in IP 71153-05. This LER is closed.

4OA5 Other Activities

.1 (Open) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

As documented in Section 1R04, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of TI 2515/177, which will be closed on a later Inspection Report.

.5 (Open) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope and Documentation

On November 10, 2009, the inspectors conducted a walkdown of the normally inaccessible portions of piping of the Unit 2 Core Spray (CS) System that are inside the drywell in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d). The inspectors also verified that the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3).

The inspectors verified that Piping and Instrumentation Diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations and the P&IDs were documented and entered into the CAP for resolution (TI 2515/177, Section 04.02.b).

In addition, the inspectors reviewed the licensee's isometric drawings that describe the CS system configurations to verify that the licensee had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors considered the following related to the isometric drawings:

- High point vents were identified;
- High points that do not have vents were acceptably recognizable;
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation;
- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified;
- All pipes and fittings were clearly shown;
- The drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

The licensee indicated that even though they possess isometric drawings of the CS system, they do not rely upon any isometric drawings for gas management in that system. Therefore, the inspectors were unable to verify the above considerations.

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177, which will be closed on a later Inspection Report.

NOTE: Dresden Inspection Report 05000237/2009-005 Section 4OA5.3 incorrectly states that the walkdown of Unit 2 HPCI piping was performed on November 10, 2008. The walkdown was actually performed on November 10, 2009.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 14, 2010, 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 Meetings

An interim exit was conducted for:

Radiation monitoring instrumentation inspection with Mr. T. Hanley and other licensee staff on February 12, 2010. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

The results of the Emergency Preparedness program inspection with the Acting Plant Manager, Mr. P. Karaba, conducted at the site on February 12, 2010. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI.A.1 of the NRC Enforcement Policy, for being dispositioned as NCVs.

- (1) As noted in Section 4OA3.2 of this report, in 2009, the licensee discovered that changes had been inappropriately made to the 2B reactor recirculation pump discharge valve above seat drain line. Title 10 CFR 50.59(d)(1) requires the licensee to maintain records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to 50.59(c). Contrary to this requirement, on November 6, 2003, the licensee discovered that the configuration of the above seat drain line for the discharge valve of the 2B Reactor Recirculation pump, which comprises part of the reactor pressure boundary, had been previously modified so that it did not match the piping and instrumentation drawing (P&ID). The licensee could not locate any records that described the scope or date of the change, nor could they locate an evaluation that provided the basis for the determination that the change did not require a license

amendment. This change resulted in the line not meeting the requirements of ASME NB3671.3 for Class 1 piping. The configuration of the above seat drain depicted on the P&ID showed a drain line piped to the equipment drain sump with two normally closed manual isolation valves. The configuration in which the above seat drain line was found during the 2003 refueling outage was a drain line with one closed valve and a threaded cap, which did not meet the requirements of ASME NB3671.3 for Class 1 piping. Issue Report 185073 was written, and a second isolation valve and a threaded cap were added to the drain line during the 2003 refueling outage to conform to ASME requirements. The P&ID was also updated to reflect the change. The finding associated with this violation is of very low safety significance (green) because it would not have likely resulted in exceeding the Technical Specification limit for Reactor Coolant System leakage and would not have affected other mitigating systems. Therefore, this would constitute a Severity Level IV violation per the NRC Enforcement Policy, Supplement I, Section D.5.

- (2) The Code of Federal Regulations, Title 10, Part 50, Appendix B, Criterion III, "Design Control", states, in part, "Measures shall be established to assure that ... the design basis, as defined in §50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled." Electrical Standard IEEE-279-1968, "Proposed IEEE Criteria for Nuclear Power Plant Protection Systems," required, in part, that the reactor protection system (RPS) was designed, such that, the system was not susceptible to a single point vulnerability. On October 30, 2009, the licensee identified that the RPS pressure switches PS 2-0504-A, B, C, and D all shared a common sensing line with a single isolation valve, which created a single point vulnerability for the turbine stop valve closure (RPS function 8) and turbine control valve fast closure - trip oil pressure low (RPS function 9) reactor scram functions. This condition had existed since original construction. The inspectors reviewed the licensee's corrective actions. The inspectors had no issues with the licensee's corrective actions and determined that they were completed for Unit 2 and had an acceptable time table for completion of Unit 3. This incident was identified in the licensee's corrective action program as Issue Reports 986676 and 996586, and documented in LER 237/2009-007-00, "Reactor Protection System Nonconformance to a Design Standard." This violation was determined to be of very low safety significance because the safety function of the reactor protection system was supported by existing procedure guidance in the event the sensing line failed or was inadvertently isolated; therefore, this condition resulted in RPS functions 8 and 9 being operable, but nonconforming.
- (3) Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization. Contrary to this requirement, on November 3, 2009, it was identified that changes had been made, either intentionally or unintentionally, to the design of the plant by the removal of several Unit 2 core spray instrument piping supports, for an indeterminate period of time, without the application of appropriate design control measures. This finding was entered into the licensee's corrective action program as IR 1002474. The licensee's corrective actions included: restoration of the

supports to the original design configuration; creation of a preventive maintenance activity to walk down piping supports prior to the drywell closeout; and an action to walkdown the Unit 3 drywell to verify all supports are connected and tight. The inspectors used Table 4b of IMC 0609.04, "Phase 1 Initial Screening and Characterization of Findings" to evaluate the significance of the finding. The finding was determined to involve the degradation of equipment specifically designed to mitigate a seismic event. The impact of the finding was that a seismic event could have resulted in the failure of the core spray dp line which would cause a seismically-induced small loss of coolant accident (LOCA) event with the possible unavailability of the "B" core spray train. The finding screened as potentially risk significant using the screening criteria of Table 4b. The RIII Senior Risk Analyst (SRA) performed a phase 3 SDP evaluation of the finding using the Dresden Standardized Plant Analysis Risk (SPAR) Model and the Risk Assessment of Operational Events Handbook, Volume 2 – External Events. The SRA used the seismic initiating event frequency for Dresden ($4.58E-04/\text{yr}$) from the handbook and assumed that any seismic event would cause the failure of the core spray dp line and result in a small LOCA. A conditional core damage probability was estimated using the SPAR model by assuming a small LOCA event occurred simultaneous with a loss of offsite power and the unavailability of the "B" core spray train. The seismic initiating event frequency was combined with the estimated conditional core damage probability to estimate the delta CDF. The delta CDF calculated was less than $1E-7/\text{yr}$, which is a finding of very low safety significance (Green). The dominant core damage sequences involved a seismically-induced small LOCA followed by the failure of both high and low pressure injection.

- (4) The licensee identified a finding of very low safety significance and associated Non-Cited Violation (NCV) of 10 CFR 50.54(t), "Conditions of Licenses," for the failure to complete an independent review of all program elements of the emergency preparedness program. The independent assessment did not evaluate and document the adequacy of the interfaces with State and local governments at an interval not to exceed 12 months for all groups. Specifically, Quality Assurance's assessment failed to evaluate the adequacy of interface with Will County in 2008. The licensee entered the issue in their corrective action program as AR-00889346 and all required audits were conducted in 2009 (Grunddy, Kendal, Will, and the State of Illinois and Indiana). The deficiency was screened using the Emergency Preparedness SDP and determined to be more than minor because the finding adversely affected the EP Cornerstone objective. The failure to conduct the audit to evaluate the effectiveness of the EP program had the attribute associated with Offsite EP; specifically, the evaluation of the working relationship between the offsite and onsite emergency response organizations and programs. The inspector evaluated the finding using with IMC 0609, Appendix B, Sheet I, Failure to Comply flowchart. The audit program was noncompliant with a regulatory requirement not involving an EP planning standard or a risk significant planning standard; therefore, the finding was determined to be of very low safety significance (Green).

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
D. Doggett, Emergency Preparedness Coordinator
B. Finlay, 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
J. Kish, Engineering Programs
D. Leggett, Nuclear Oversight Manager
R. Laburn, Radiation Protection
P. Mankoo, Chemistry Supervisor
M. Marchionda, Regulatory Assurance Manager
P. O'Connor, Licensed 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 Manager
S. Vercelli, Work Management Director

NRC

M. Ring, Chief, Division of Reactor Projects, Branch 1

IEMA

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

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

| | | |
|--|-----|--|
| 05000237/2010002-01 05000249/2010002-01 | NCV | Failure to Record the Identity of Personnel Performing Post-Maintenance Tests (Section 1R19) |
| 05000237/2010002-02 05000249/2010002-02 | NCV | Failure to Follow Technical Specification 5.5.4 Implementing Procedure (Section 1R22) |
| 05000237/2010002-03 05000249/2010002-03 | FIN | Failure to Meet Regulatory Commitment to Maintain Contingency Plans for Post-Accident Sampling (Section 2RS5) |
| 05000237/2010002-04 05000249/2010002-04 | NCV | Significance of Potentially Submerged Safety and Nonsafety-related Low Voltage Power and Control Power Cables (Section 4OA2.4) |
| 05000249/2010002-05 | FIN | Electro-Hydraulic Control (EHC) Fluid Leaking From Stop Valve 3-5699-MSV4-FA Resulting in Forced Outage D3F49 (Section 4OA3.1) |

Closed

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|--|-----|--|
| 05000237/2010002-01 05000249/2010002-01 | NCV | Failure to Record the Identity of Personnel Performing Post-Maintenance Tests (Section 1R19) |
| 05000237/2010002-02 05000249/2010002-02 | NCV | Failure to Follow Technical Specification 5.5.4 Implementing Procedure (Section 1R22) |
| 05000237/2010002-03 05000249/2010002-03 | FIN | Failure to Meet Regulatory Commitment to Maintain Contingency Plans for Post-Accident Sampling (Section 2RS5) |
| 05000237/2010002-04 05000249/2010002-04 | NCV | Significance of Potentially Submerged Safety and Nonsafety-related Low Voltage Power and Control Power Cables (Section 4OA2.4) |
| 05000249/2010002-05 | FIN | Electro-Hydraulic Control (EHC) Fluid Leaking From Stop Valve 3-5699-MSV4-FA Resulting in Forced Outage D3F49 (Section 4OA3.1) |
| 05000237/2009004-01 05000249/2009004-01 | URI | Significance of Potentially Submerged Safety and Nonsafety-related Low Voltage Power and Control Power Cables |
| 05000249/2009005-10 | URI | Electro-Hydraulic Control (EHC) Fluid Leaking From Stop Valve 3-5699-MSV4-FA Resulting in Forced Outage D3F49 |
| 05000237/2009-005-00 | LER | Unit 2 Reactor Recirculation Drain Line Pressure Boundary Leakage |

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|--|-----|---|
| 05000237/2009-007-00 05000249/2009-007-00 | LER | Reactor Protection System Nonconformance to a Design Standard |
| 05000237/2009-008-00 | LER | Unit 2 Core Spray Break Detection Instrument Line Not Seismically Supported |

LIST OF DOCUMENTS REVIEWED

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

Section 1R01 Adverse Weather Protection (71111.01)

- IR 01026898, "NRC Inspector Identified Degraded Electrical Junction Boxes"
- IR 01026892, "NRC Resident Observation Reported to the WEC"
- WO 01001541-95, "OPS Perform Cold Weather Preparations"
- WO 01001541-96, "OPS Perform Cold Weather Initiations"
- DOS 0010-25, "Preparation for Cold Weather for Unit 3," Revision 17
- DOS 0010-28, "Preparation for Cold Weather for Radwaste," Revision 21
- DOS 0010-29, "Initiation of Cold Weather Operations for Radwaste," Revision 08
- DOS 0010-22, "Preparations for Cold Weather for Unit 2," Revision 18
- Drawing 12E-2013, "Electrical Installation Pipe Heating," Revision T
- Drawing 12E-2079, "Electrical Installation Reactor Building Elevation 545'-6" North," Revision AX

Section 1R04 Equipment Alignment (71111.04Q)

- DOP 6600-04, "Diesel Generator 2/3 Preparation for Standby Condition," Revision 19
- DOP 6600-M2, "Unit 2/3 Standby Diesel Generator," Revision 25
- DOP 6600-E2, "Unit 2/3 Standby Diesel Generator," Revision 05
- DOP 1400-M1/E1, "Unit 3 Core Spray System," Revision 20
- DOP 1100-M1/E1, "Unit 3 Standby Liquid Control (SBLC) System Checklist," Revision 15
- DOP 1100-01, "Standby Operation of Standby Liquid Control System," Revision 22
- Drawing M-364, "Diagram of Standby Liquid Control Piping," Revision AS

Section 1R04 Equipment Alignment (71111.04A)

- DOP 1500-01, "Preparation of Low Pressure Coolant Injection for Automatic Start," Revision 15
- DOP 1500-M1, "Unit 2 LPCI and Containment Cooling Valve Checklist," Revision 40
- DOP 1500-E1, "Unit 2 LPCI and CCSW Electrical," Revision 12
- DOP 1400-M2, "ECCS Fill System," Revision 9
- OP-AA-108-103, "Locked Equipment Program," Revision 2
- IR 01038781, "Vent Required in Unit 2 ECCS Keepfill Pump Discharge"
- EC 371152, "NRC GL 2008-01 Dresden LPCI System Evaluation to Support Response to NRC GL 2008-01," Revision 3
- M-29, "Diagram of L.P. Coolant Injection Piping," Sheet 1, Revision CH
- M-29, "Diagram of L.P. Coolant Injection Piping," Sheet 2, Revision BC
- IR 00990175, "CCP: EPN Tags on Wrong Sensing Lines"
- WO 00419694-07, "Fill & vent 2C LPCI Pump sensing lines per DOP 1400-03,"
- DOP 1400-03, "ECCS Fill System," Revision 50
- 12E-2780C, "Wiring Diagram Instrument Rack 2202-19B Section A LPCI/Containment & Core Spray," Revision X

Section 1R05 Fire Protection (71111.05Q)

- Dresden Generating Station Pre-Fire Plan, "Fire Area/Zone: FZ 1.1.1.6 & 1.1.2.6, Unit 2/3 Refueling Floor Elev. 613', Revision 1
- Dresden Generating Station Pre-Fire Plan, "Fire Area/Zone: FZ 8.2.6.A, Unit 2 CREVS, Revision 2
- Dresden Generating Station Pre-Fire Plan, "Fire Area/Zone: FZ 6.2, Unit 2/3 COMP Room & Auxiliary Electrical Room Elev. 517," Revision 1
- Dresden Generating Station Fire Pre-Fire Plan, "Fire Area/Zone: FZ 11.1.3, Unit 3 HPCI Pump Room Elev. 476'," Revision 1

Section 1R12 Maintenance Effectiveness (71111.12)

- IEEE Std 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications"
- IR 1031876, "Airflow Requirements For Unit 2 125VDC Battery Room"
- IR 988418, "Cold Unit 2 Battery Room Temperature"
- WO 00927651-01, "U2 24M TS 125 Battery Charger 2A, 4 Hour Load Test"

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

- Dresden Nuclear Power Station, Operations Department Policy, Policy No. 02, "Protected Equipment/Pathway Policy," dated 09/24/09
- DOS 1100-04, "Standby Liquid Control System Quarterly/Comprehensive Pump Test for the Inservice Testing (IST) Program," Revision 42
- Dresden Nuclear Power Station, Operations Department Policy, Policy No. 02, "Protected Equipment/Pathway Policy," dated 09/24/09
- Drawing 12E-2661A, "Wiring Diagram 480V Switchgear Bus 29 Sections 291, 292 & 293," Revision AT
- Drawing 12E-2320, "Key Diagram Reactor Building 480V Motor Control Centers 29-4, 28-7 & 29-7," Revision AR
- Drawing 12E-2306, "Key Diagram Reactor Building 480V AC Switchgear 28 & 29," Revision AD
- WO 00863748, "Perform Cubicle Inspection at Bus 29 Cubicle 3B," Dated 2/4/2010
- WC-AA-101, "On-Line Work Control Process," Revision 17
- DTS 6700-02, "Walkdown Inspections of Essential Switchgear Prior to Unit 2 Startup After a Refueling Outage," Revision 10
- DOP 6700-03, "Bus 29(39) Outage," Revision 21
- DOP 6700-18, "Bus 28 Outage," Revision 2
- IR 01026389, "Overly Conservative Risk Assessment"
- WO 01103648, "D2 5Y TS 125V STA Main Batt Modified Performance Test"
- DES 8300-58, "Unit 2 125 Volt Main Battery Modified Performance Test," Revision 13
- Drawing 12E-2322B, "Overall Key Diagram 125V DC Distribution Centers," Revision L
- Drawing 26302-009, "125 VDC Distribution," Revision 01

Section 1R15 Operability Evaluations (71111.15)

- IR 990303, "D2R21 Snubber 2-3019-54 Exceeded Acceptance Criteria"
- IR 993493, "DR21 Snubber 2-3001A-47 Exceeded Acceptance Criteria"
- IR 989605, "Snubber Angle Outside of Allowable Installation Tolerance"

- IR 992718, "D2R21LL: Snubber 2-3019D-56 Exceeded Acceptance Criteria"
- IR 01026001, "NRC Identified: Historical Operability Task not Generated"
- IR 1020072, "Historical Operability of MS-C due to Failed Snubber"
- EACE 990303-03, "Snubber Failures Caused Unexpected Scope Expansion in D2R21"
- IT-7000-M-PS-04, "Installation Tolerances Pipe Supports," Revision B
- VT-3 09-554 for 2-3019C-54, Dated 11/4/2009
- Drawing ISI-308, "Inservice Inspection Class III Safety-related Piping," Revision B
- WO 1285302-11, "Repair PWHP-2"
- WO 01250942, "Replace Flex Hoses for U3 EDG for Op Eval 09-003," Dated 9/23/2009
- WO 99207934, "D3 6Y PM Standby Diesel Generator Inspection," Dated 11/08/2009
- WO 00889893, "D3 2Y PM Standby Diesel Generator Inspection," Dated 11/12/2007
- CC-AA-407, "Maintenance Specification: Evaluation and Repair of Piping and Equipment Flanges"
- IR 01022260, "U3 DGCW Piping Flanges, UT Thickness Results Above Minimum"
- IR 01021725, "U3 DGCW Flanges Less Than B16.5 Minimum Thickness"
- IR 01022325, "Leak on U3 EDG Cooling Water Flange / HX"
- IR 01022913, "NRC Comments Regarding EDG Maintenance"
- IR 01022690, "NRC Concerns"
- Drawing ISI-203 Sh1, "Inservice Inspection Class II High Pressure Coolant Injection Piping"
- AR 01029105, "Air Void Identified on U2 HPCI Discharge Piping Above Torus"
- DOS 1400-07, "ECCS Venting," Revision 28
- ER-DR-200-101, "Periodic Monitoring for Gas Accumulation in ECCS Systems," Revision 2
- WO 01303688-02, "D2 1M TS HPCI DISCH Piping Water Filled Verification"
- WO 01295581-01, "D2 1M TS HPCI DISCH Piping Water Filled Verification"

Section 1R18 Plant Modifications (71111.18)

- M-360, "Diagram of L.P. Coolant Injection System," Sheet 1, Revision VO
- M-360, "Diagram of L.P. Coolant Injection Piping," Sheet 2, Revision AX
- M-355, "Diagram of Service Water Piping," Revision RY

Section 1R19 Post-Maintenance Testing (71111.19)

- WO 1102337-18, "PMT Cooling Water Flanges After Fastner Change"
- WO 1102337-17, "OP D3 Run D/G Cooling Water Pump"
- WO 1267208-05, "OP PMT Verify Proper Operation MCC 39-2, Cub C2"
- WO 1267208-09, "OP PMT Verify Proper Operation MCC 39-2, Cub E3"
- WO 0658904-03, "OP Perform PMT After EM's Complete MCC Cubicle PM"
- WO 1278731-02, "OPS Check Flex Hoses for Leaks on 3 EDG Jacket Water System"
- WO 1207620-02, "OP-PMT Air Start Regulator on D3 EDG DOS 6600-01"
- WO 0928076-02, "OP Perform PMT After EM's Complete 4kV Breaker PM"
- MA-AA-716-011, "Work Execution and Close Out," Revision 12
- ER-AA-321-1007, "Inservice Testing (IST) Program Corporate Technical Positions," Revision 0
- 3B SBLC pump leak repair
- IR 1018997, "NRC RI Questions Preconditioning During 3B SBLC Run"
- DMP 1100-05, "Standby Liquid Control Pump Packing and Valve Maintenance," Revision 6
- DOS 1100-04, "Standby Liquid Control System Quarterly/Comprehensive Pump Test for the Inservice Testing (IST) Program," Revision 42
- WO 1282853, "Boron Liquid Leak on 3B SBLC Pump," Dated 12/2/2009
- WO 1260058, "D3 2Y TS 3B SBLC PMP Comprehensive Test for IST Surveillance"

- WO 1001541-76, "3B SBLC System Pump Test for Operability Verification"
- IR 1018997, "NRC Questions Preconditioning During 3B SBLC Run"
- IR 1016145, "IEMA Identifies PMT Not Specified For CS Vent Installation"
- 24-1 to 34-1 4kV tie breakers post-maintenance testing
- WO 00916427, "D2 4Y PM 4KV Cub. Insp. Bus 24-1 CUB 13; Tie to 34-1," Completed 1/22/2010
- Drawing 12E-2304, "Key Diagram 4160V Switchgears 23-1 and 24-1," Revision V
- Drawing 12E-2304, "Key Diagram 4160V Switchgears 33-1 & 34-1," Revision U

Section 1R22 Surveillance Testing (71111.22)

- Unit 2 125 Volt Main Battery Modified Performance Test
- DES 8300-58, "Unit 2 125 Volt Main Battery Modified Performance Test," Revision 13
- Drawing 12E-2322B, "Overall Key Diagram 125V DC Distribution Centers," Revision L
- Drawing 26302-009, "125 VDC Distribution," Revision 01

Section 1EP2 Alert and Notification System Evaluation (71114.02)

- Dresden Off-Site Siren Test Plan; dated December 2007
- Warning System Maintenance and Operational Report; conducted September 22 through December 22, 2009
- Warning System Maintenance and Operational Report; conducted September 24 through November 18, 2008
- Siren Monthly Operability Reports; 2nd Quarter 2008 through 1st Quarter 2010
- Siren Daily Operability Reports; 2nd Quarter 2008 through 1st Quarter 2010

Section 1EP3 Emergency Response Organization Augmentation Testing (71114.03)

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 19
- TQ-AA-113; ERO Training and Qualification; Revision 14
- OP-DR-101-111-1001; On-Shift Staffing Requirements; Revision 1
- Dresden Station Emergency Response Organization; Emergency Preparedness Duty List; February 10, 2010
- Dresden Station Call-in Augmentation Drill Results; dated January 2008 through December 2009
- Emergency Response Organization (ERO) Augmentation Call-in Drill Results; EOF Staffing Detail; January 2008 through December 2009
- Dresden Station Selected Emergency Response Personnel Training Records
- Exelon Nuclear Pamphlet; Emergency Planning for the Dresden Area, Important Information for Your Community, 2008/2009

Section 1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

- NO-AA-210-1001; Attachment 17, Emergency Preparedness Master Audit Plan; Revision 1
- Audit Template; Emergency Preparedness; Instructions, Procedures, and Drawings; Revision 8
- LS-AA-126-1001; FASA Self-Assessment Report; NRC Baseline Program Inspection Readiness; dated December 11, 2009

- NOSA-DRE-09-04 (AR 852001); Emergency Preparedness Audit; Dresden Station; conducted April 20 through April 24, 2009; dated April 28, 2009
- NOSA-DRE-08-03 (AR 706480); Emergency Preparedness Audit; Dresden Station; conducted April 28 through May 2, 2008; dated April 7, 2008
- NOSA-DRE-07-04; Emergency Preparedness; Offsite Agency Interface; dated April 27, 2007
- NOS Objective Evidence; Emergency Preparedness Audit; Cantera; Offsite Agency Interface; conducted March 30 through April 3, 2009
- NOS Objective Evidence; Emergency Preparedness Audit; Dresden Unit 2 and 3; Offsite Agency Interface; conducted April 20 through April 24, 2009
- NOS Objective Evidence Report; 2008 Emergency Preparedness Audit; Offsite Agency Interface; conducted March 31 through April 4, 2008; dated May 7, 2008
- Exelon 2009 Offsite Agency Emergency Action Level (EAL) Training Materials
- Correspondence to Offsite Agencies; Subject: Emergency Action Level (EAL) Annual Review; 2008 and 2009
- IR 631032; NOS Objective Evidence Report; Attachment 1; dated May 18, 2007
- Dresden 2009 NRC Graded Exercise Evaluation Report; dated March 25, 2009
- AR 00883878; A Standardized Methodology for Adding Time to a NARS Notification during Operations Training; dated January 28, 2010
- AR 00889346; Local Counties Were Not Contacted during QDC NOS EP Audit; dated March 6, 2009
- AR01004264; EP FASA Deficiency – ERO Controls; dated December 11, 2009
- AR 01004269; EP FASA Deficiency – Improper PAR Opportunity; dated December 11, 2009
- AR 00902040; NOS IDS Equipment and Facility Readiness ARMA; dated April 4, 2009
- AR 00862747; Evaluate PA Speakers; dated March 20, 2009
- AR 00929982; Missed Classification during Drill Results in DEP Failure; dated June 10, 2009
- AR 01028169; Entry into DOA 0010-03; dated February 10, 2010
- AR00773766; Dresden EP Drill 2008 – OSC Failed DC H.3.4; dated May 9, 2008
- AR 00900365; 2009 Dresden NRC Graded Exercise TSC Unsatisfactory Demonstration Criteria; dated March 31, 2009
- AR 00905174; Comments from Dresden NRC – Graded EP Exercise; dated April 9, 2009

Section 2RS5 Radiation Monitoring Instrumentation

- TID-2008-003; Establish Baseline for Am-Be Neutron Source for Performing Rem Ball Source Checks; dated August 11, 2008
- DRP-5822-08; Sensitivity Checks of Personnel Contamination Monitors; Revision 4
- DRP-5825-03; Operation of the Shepherd Model 89 Calibrator; Revision 6
- Self-Assessment Report; Radiation Protection Instrumentation; dated December 18, 2009
- RP-DR-900; Calibration of the NMC Wind-2B Continuous Air Monitor; Revision 9
- DRP-5822-07; Calibration, Maintenance and Operation of the IPM-9D Whole Body Frisking Monitor; Revision 2
- RP-AA-700-1401; Operation and Calibration of Eberline Model PM-7 Personnel Contamination Monitor; Revision 0
- RP-DR-703; Operation & Calibration of the Gamma Portal Monitor (PM-12); Revision 0
- Calibration Data Sheets for Unit 3 Drywell CAM and Unit 2/3 Refuel Floor CAM; dated December 7 - 8, 2009 and February 2 - 3, 2010, respectively
- Calibration Data Sheets for IPM-9D, Monitors No. 286, 288, 289, 290, 291, 295, 293 and 294; dated various periods between May 2009 and October 2009
- PM-12 Calibration Record for Units No. 121 and 122; dated April 10 and 29, 2009
- PM-7 Calibration Report for Units No. 2, 3, 4; dated April 27, 2009

- SAM Calibration Data Sheets for Unit No. 236 and 222; dated June 2, 2009
- Report of Calibration for the Canberra Fastscan WBC System at Dresden Nuclear Generating Station; dated August 19, 2009
- Shepherd Instrument Calibrator Source Characterization; dated March 31, 2009
- MGP AMP-100 (serial number 5099-034) Calibration Record; dated August 13, 2009
- MGP Telepole (serial number 6607-034) Calibration Record; dated September 17, 2009
- Bicon RSO-50E (serial number C779D) Calibration Record; dated September 15, 2009
- Eberline PNR-4 (serial number 1288) Calibration Record; dated November 30, 2009
- Calibration Reports for Various ARMs (Unit 3 Refuel Floor High Range, Unit 2 Iso Condenser Area, Unit 2/3 TIP Cubicle, Unit 2 Torus Area and Unit 2/3 Charcoal Adsorber Vaults); dated Various Periods Between December 18, 2008 - September 2, 2009
- CY-DR-150-8900; Annual HRSS Contingency Capability Plan Verification; Revision 1
- AR 00981412; U3 HRSS Sample Chiller Inop - Can't Pull Liquid Samples; dated October 19, 2009
- AR 00993114; Vulnerability in HRSS Readiness; dated November 13, 2009
- CY-DR-150-8900; Annual HRSS Contingency Capability Plan Verification Data Sheets (and associated gamma isotopic analyses); dated various periods between October 13, 2008 - November 10, 2009 and February 13 and 17, 2010
- Calibration Data for Unit 2 High Range Radiation Monitor (2419A & 2419B); dated November 4 - 5, 2009
- Calibration Data for Unit 3 High Range Radiation Monitor (2419A & 2419B); dated November 12 - 13, 2008
- Calibration and Functional Test Data for Unit 2 and Unit 3 Service Water Radiation Monitors (DIS 3900-01 and DIS 3900-06); dated December 8, 2008 and October 22, 2008
- Calibration Data for Unit 2 and Unit 3 Isolation Condenser Radiation Monitors (DIS 1300-04); dated February 13, 2009 and May 14, 2009
- Calibration Data for River Discharge Monitor (DIS 200-03); dated June 26, 2009
- Calibration Data for Plant Chimney Monitor (DIS 1700-23); dated September 17, 2009
- Efficiency Calibration Data for Gamma Spectroscopy Detectors No. 8973769, 8973824, 6973834, 2997068, 33P308, and 36P407 (various liquid and gaseous geometries); dated between September 15, 2008 – November 20, 2009
- Calibration Data for Liquid Scintillation Counters (instrument no. TR2555 and TR2900); dated January 22, 2010 and May 26, 2009, Respectively
- Daily Performance Data for Gamma Spectroscopy Systems and Liquid Scintillation Counters; data for 2009 – January 2010
- AR 00997949; U2/3 Service Water Radiation Monitor Loss of Communications; dated November 11, 2009
- Apparent Cause Report No. 923384; Unit 2 Channel A Drywell Radiation Monitor Spiking; dated July 13, 2009
- AR 00999210; Trip of Radiation Monitor for Unit 3 Fuel Pool; dated November 29, 2009
- AR 00926287; Chimney SPING Air Line Fitting Leak; dated June 1, 2009

40A1 Performance Indicator Verification (71151)

- NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- LER 237/2009-001, "Common Mode Failure of Reactor Building Isolation Dampers," Revision 00
- LER 237/2009-002, "Unit 2 High Pressure Coolant Injection Suction Valve Fails to Close," Revision 00
- LER 237/2009-003, "Emergency Diesel Generator Oil Leak," Revision 00

- LER 237/2009-004, "Unit 2 Shutdown Cooling System Isolation during Cooldown due to Temperature Instrumentation Failure," Revision 00
- LER 237/2009-005, "Unit 2 Reactor Recirculation Drain Line Pressure Boundary Leakage," Revision 00
- LER 237/2009-901, "EN 45592: Invalid Start of the Unit 2/3 Emergency Diesel Generator," 12/28/2009
- LER 249/2009-001, "Unit 3 Group I Isolation and Automatic Reactor Scram," Revision 00
- LER 249/2009-901, "EN 45216: Optional 60-Day Report of Invalid Specified System Actuation," 7/21/2009
- IR 829039, "U2 Rx Build Vent Isol Dampers 2-5741A and 2-5742B Failed"
- IR 877591, "Potential 10 CFR50 Part 21 Notification of VERSA Air Solenoid"
- LS-AA-2110; Monthly Data Elements for NRC Emergency Response Organization Drill Participation Records; 1st Quarter through 4th Quarter 2009
- LS-AA-2120; Monthly Data Element for NRC Drill/Exercise Performance; 1st Quarter through 4th Quarter 2009
- LS-AA-2130; Monthly Data Elements for NRC Alert and Notification System Reliability; 1st quarter through 4th Quarter 2009
- AR 00881294; EP FASA Deficiency #1: Participation Data Error; February 16, 2009
- AR 00881300; EP FASA Deficiency #3: Inappropriate Credit Given; February 16, 2009

4OA2 Identification and Resolution of Problems (71152)

- IR 975308, "NRC Concerns on Submerged Electrical Cables"
- NRC Information Notice 2002-12, "Submerged Safety-Related Cables"
- IR 953012, "NRC U/2/3 Cable Tunnel/Observations"
- IR 962651, "Need to Remove Cable/Duct Seals"

4OA3 Event Follow-up (71153)

- IR 986676, "Auto BYP Sensors not in Accordance with UFSAR Requirements"
- IR 996586, "Auto BYP Sensors not in Accordance with Design and Licensing"
- LER 237/2009-007-00, "Reactor Protection System Nonconformance to a Design Standard"
- LS-AA-125, "Corrective Action Program Procedure," Revision 13
- Design Change Package for EC 377953-000 / WO 01287884, "Reconfigure the RPS Pressure Switches (PS) 2-0504-C and -D Sensing Lines"
- Operability Evaluation 09-009 for IR 0996586
- OP-AA-108-115, "Operability Determinations," Revision 9

4OA5 Other Activities

- EC 371151, "NRC GL 2008-01 Core Spray & Keepfill System Evaluation," Revision 3
- IR 993244, "Reverse Slope Identified 2B Core Spray Line in DW"
- M-27, "Diagram of Core Spray Piping," Rev AAK
- ISI-104, "Inservice Inspection Class I Core Spray Piping," Rev H
- M-1150E-1, "Blume Curve Math Model Core Spray Piping System," Revision 2
- M-1150E-2, "Blume Curve Math Model Core Spray Piping System," Revision 2

4OA7 Licensee-Identified Violations

- IR 986676, "Auto BYP Sensors not in Accordance with UFSAR Requirements"
- IR 996586, "Auto BYP Sensors not in Accordance with Design and Licensing"
- LER 237/2009-007-00, "Reactor Protection System Nonconformance to a Design Standard"
- LS-AA-125, "Corrective Action Program Procedure," Revision 13
- Design Change Package for EC 377953-000 / WO 01287884, "Reconfigure the RPS Pressure Switches (PS) 2-0504-C and -D Sensing Lines"
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- OP-AA-108-115, "Operability Determinations," Revision 9

LIST OF ACRONYMS USED

| | |
|-------|---|
| ADAMS | Agencywide Document Access Management System |
| ACE | Apparent Cause Evaluation |
| ANS | Alert and Notification System |
| ARM | Area Radiation Monitors |
| ASME | American Society of Mechanical Engineers |
| CAM | Continuous Area Monitors |
| CAP | Corrective Action Program |
| CCSW | Containment Cooling Service Water |
| CDF | Core Damage Frequency |
| CFR | Code of Federal Regulations |
| CO | Clearance Order |
| CRD | Control Rod Drive |
| CREVS | Control Room Emergency Ventilation |
| CST | Condensate Storage Tank |
| D2 | Dresden Unit 2 |
| DRP | Division of Reactor Projects |
| EACE | Equipment Apparent Cause Evaluation |
| EC | Engineering Change |
| EDG | Emergency Diesel Generator |
| EHC | Electro-Hydraulic Control |
| EOP | Emergency Operating Procedures |
| EP | Emergency Preparedness |
| ERO | Emergency Response Organization |
| FSAR | Final Safety Analysis Report |
| GE | General Electric |
| HPCI | High Pressure Coolant Injection |
| HPG | High Purity Germanium |
| HRSS | High Radiation Sampling System |
| Hx | Heat Exchanger |
| IEEE | Institute of Electrical and Electronics Engineers |
| IEMA | Illinois Emergency Management Agency |
| IMC | Inspection Manual Chapter |
| INPO | Institute of Nuclear Power Operations |
| IP | Inspection Procedure |
| IR | Issue Report |
| ISI | Inservice Inspection |
| IST | In-service Test |
| LER | Licensee Event Report |
| LOCA | Loss of Coolant Accident |
| LPCI | Low Pressure Coolant Injection |
| LSC | Liquid Scintillation Counters |
| MCC | Motor Control Center |
| MSV | Main Stop Valve |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NIST | National Institute of Standards and Technology |
| NLO | Non-Licensed Operator |
| NRC | Nuclear Regulatory Commission |

| | |
|-------|--|
| NRR | Office of Nuclear Reactor Regulation |
| ODCM | Offsite Dose Calculation Manual |
| PARS | Publicly Available Records |
| PCM | Personnel Contamination Monitors |
| PI | Performance Indicator |
| PI&D | Piping and Instrumentation Diagram |
| PM | Planned or Preventative Maintenance, or Post-Maintenance |
| PM | Portal Monitors |
| PMT | Post-Maintenance Testing, or Preventative Maintenance |
| RCR | Root Cause Report |
| RCS | Reactor Coolant System |
| RETS | Radiological Effluent Technical Specifications |
| RPS | Reactor Protection System |
| SAM | Small Article Monitors |
| SBLC | Standby Liquid Control |
| SDP | Significance Determination Process |
| SER | Safety Evaluation Report |
| SIL | Services Information Letter |
| SPAR | Standardized Plant Analysis Risk |
| SRA | Senior Reactor Analyst |
| SSC | Structures, Systems, and Components |
| TI | Temporary Instruction |
| TIL | Technical Information Letter |
| TS | Technical Specification |
| U2 | Unit 2 |
| U3 | Unit 3 |
| UFSAR | Updated Final Safety Analysis Report |
| URI | Unresolved Item |
| UT | Ultrasonic Examination |
| WBC | Whole Body Counters |
| WO | Work Order |

C. Pardee

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Sincerely,

/RA/

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

Docket Nos. 50-237; 50-249
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SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
INTEGRATED INSPECTION REPORT 05000237/2010-002;
05000249/2010-002

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