



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

May 8, 2012

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

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 - NRC
INTEGRATED INSPECTION REPORT 05000237/2012002 and
05000249/2012002

Dear Mr. Pacilio:

On March 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. The enclosed inspection report documents the inspection results which were discussed on April 19, 2012, with Mr. D. Czufin, and other members of your staff.

The inspections 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.

Three self-revealing findings of very low safety significance (Green) were identified during this inspection. Two of these findings were determined to involve violations of NRC requirements. Additionally, the NRC has determined that two traditional enforcement Severity Level IV violations occurred. Both of these traditional enforcement violations were identified with associated findings. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these NCVs, 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 copies to the Regional Administrator, Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Dresden Nuclear Power Station. If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Dresden Nuclear Power Station.

M. Pacilio

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000237/2012-002 and 05000249/2012-002
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000237; 05000249
License Nos: DPR-19; DPR-25

Report No: 05000237/2012-002; 05000249/2012-002

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station, Units 2 and 3

Location: Morris, IL

Dates: January 1 through March 31, 2012

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Enclosure

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SUMMARY OF FINDINGS

Inspection Report 05000237/2012-002, 05000249/2012-002; 01/01/2012 – 03/31/2012; Dresden Nuclear Power Station, Units 2 & 3, Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation Program; Follow up of Events, and Notices of Enforcement Discretion.

This report covers a 3-month period of inspection by resident inspectors and region based inspectors. Two (2) Green findings were identified by the inspectors and three (3) Green findings were self-revealing. All of the findings were considered non-cited violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

Green. A finding of very low safety significance was self-revealed for the failure to have adequate maintenance instructions to install the Unit 2 Control Rod Drive (CRD) Flow Control Valve A/B Selector Valve (2-302-6B) which resulted in the separation of the plastic instrument air tubing and the Unit 2 CRD flow control valves failing closed. The licensee made temporary repairs to 2-302-6B and wrote a work request to make final repairs. The licensee also wrote work requests to inspect the Unit 3 selector switch. The licensee also wrote a procedure change request to review DOA 0300-01, "Control Rod Drive System Failure," to clarify the decision to scram upon flow control valve failure. The licensee generated a corrective action to tie procurement engineering (PE) document 56060 to the new 2-302-6B model number. The licensee planned to prepare an equipment apparent cause evaluation (EACE). Additional corrective actions should result from the EACE.

The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of equipment performance of the Cornerstone Objectives and Attributes Tables of Manual Chapter 0612, Appendix B, dated January 1, 2010, and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. 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 inspectors determined that the finding did not result in both the likelihood of reactor trip and the likelihood that mitigation equipment or functions would not have been available. Therefore, the finding screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date design documentation. Specifically, the failure to attach PE 56060 to the most current part number necessary to replace 2-302-6B

resulted in the failure to include instructions to install plastic piping connectors in the work order that was used to replace 2-302-6B. (H.2(c)) (Section 4OA3.3)

Cornerstone: Barrier Integrity

Severity Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," having very low safety significance (Green) for the licensee's failure to perform an adequate safety evaluation review for changes made to the facility involving the placement of chemical storage tanks. As part of its corrective action, the licensee entered the issue into its corrective action program as IR 1302573 and performed Engineering Change Evaluations (EC) 38018 and EC 387073 which determined that the control room envelope had been historically operable. The licensee planned to install a completely different design of the chemical addition system that would separate the sodium hypochlorite storage from the hydroxyethylidenediphosphonic acid (HEDP, a strong acid) storage. Completion of the modification is planned for August 2012.

The underlying technical finding was evaluated under the SDP using NRC's IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," and the inspectors answered "Yes" to the question in Table 4a; "Does the finding represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere?" The SDP required a Phase 3 analysis to resolve this type of finding. However, after consultation with a Region 3 Senior Reactor Analyst it was determined that no SDP methods or tools exist to determine the significance of the finding. Therefore, the finding was not suitable for evaluation using the SDP, so the risk significance was established in accordance with the qualitative criteria of Appendix M (dated December 22, 2006) of IMC 0609. Specifically, the qualitative decision-making attribute from Table 4.1 of Appendix M, "Finding can be bounded using qualitative and/or quantitative information" was applicable to this finding. The licensee performed two quantitative engineering evaluations regarding this finding. The first (EC 387018) determined the minimum level of sodium hypochlorite stored in the tanks necessary that if it were to completely interact with the HEPD and completely release all of the contained chlorine would render the control room envelope inoperable. The second (EC 387073) determined that the tanks would not have been affected by wind, seismic, or missile impacts with a level of sodium hypochlorite equal to or greater than the level necessary to make the control room envelope inoperable identified in EC 387018. Therefore, based upon a qualitative measure of risk determined in accordance with Appendix M, NRC Management concluded that the issue was of very low safety significance (Green). This finding has no cross-cutting aspect because it does not represent current licensee performance. (Section 4OA3.2)

Green. A finding of very low safety significance and associated non-cited violation of Technical Specification (TS) Section 5.4.1 was self-revealed because the work instructions associated with WO 1450006-01, "D2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," were inadequate. The use of inadequate work instructions resulted in the temporary failure of the secondary containment boundary between the Unit 2 Reactor Building and the Unit 2 Turbine Building. The licensee's corrective actions included disciplining the maintenance planner and having each of the maintenance department heads prepare human performance improvement plans.

The finding was determined to be more than minor because the finding was associated with the Barrier Integrity Cornerstone attribute of configuration control and affected the cornerstone objective of maintaining the functionality of containment. 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 Barrier Cornerstone because the finding affected the secondary containment. The inspectors answered all four questions 'No' which resulted in the finding screening as having very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not ensure that human error techniques such as self and peer checking was used during the creation of the work package. Licensee and management personnel stated that the work planner failed to adequately self-check and get a peer check on the completion of the preparation of the work package. (H.4(c)) (Section 40A3.4)

Cornerstone: Public Radiation Safety

Green. A finding of very low safety significance was self-revealed following the licensee's failure to appropriately package and transport radioactive material. This finding also resulted in two associated NCVs of 10 CFR 61.56(a)(3) and 10 CFR 71.5(a). The licensee's corrective actions included revising procedures and completing a detailed review through an apparent cause evaluation of the event. Additionally, the licensee suspended all radioactive material shipments using similar general packagings as a part of their corrective actions.

This finding was assessed using IMC 0609, Attachment D, "Public Radiation Safety Significance Determination Process," and determined to be of very low safety significance (Green). The inspectors determined that the finding did not involve the radioactive effluent release program or the radiological environmental monitoring program. The finding did involve the transportation of radioactive material. However, no external radiation levels or surface contamination levels were exceeded, the finding did not involve the certificate of compliance, and there was no failure to make notifications or provide emergency information. The finding did involve a breach of the package during transit and low-level burial ground non-conformance. However, the finding did not involve the loss of package contents or waste classification issues. The inspectors determined that the primary cause of this finding was related to a cross-cutting aspect in the area of Problem Identification and Resolution. (P.2(b)) (Section 2RS8)

Other Findings:

Severity Level IV. The inspectors identified a Severity Level IV NCV and associated finding of very low safety significance of 10 CFR 50.72(b)(3)(v)(D), "Immediate Notification Requirements for Operating Nuclear Power Reactors," for the failure to report an event to the NRC within 8 hours, where an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The licensee had not prepared any corrective actions by the end of the inspection period.

The inspectors determined that a failure to report was an example of a violation that could impact the regulatory process and was subject to Traditional Enforcement. The inspectors determined that the underlying technical issue involved the inability to scram

Unit 3 on flow biased neutron flux-high or fixed neutron flux-high functions within the TS limits prescribed in TS 3.3.1.1, Table 3.3.3.3-1, 2.b and c. The inspectors determined that the issue was more than minor, because if left uncorrected it would have had the potential to lead to a more significant safety concern. Using IMC 0609, Table 4a, "Characterization Worksheet for IE, MS, and BI Cornerstones," the inspectors determined that the finding had very low safety significance because they answered 'No' to all five questions contained in Column 2 of the Table 4a worksheet. The inspectors also determined that the contributing cause that provided the most insight into the performance deficiency affected the cross-cutting area of Problem Identification and Resolution, including properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality. (P.1(c)) (Section 4OA3.5)

B. Licensee-Identified Violations

No violations were identified.

REPORT DETAILS

Summary of Plant Status

Unit 2

On February 18, 2012 operators reduced power to approximately 57 percent electrical for planned turbine valve testing, 10 percent scram time testing, and sequence exchange. Operators restored power to 100 percent on February 19, 2012.

The unit operated at or near 100 percent power during the balance of the inspection period, with the exception of operators reducing power routinely for planned control rod pattern adjustments and testing activities.

Unit 3

On March 3, 2012 operators reduced power to approximately 62 percent electrical for a planned sequence exchange, 10 percent scram time testing, and turbine valve testing. Operators returned the unit to full power operation on March 4, 2012.

The unit operated at or near 100 percent power during the balance of the inspection period, with the exception of operators reducing power routinely for planned control rod pattern adjustments and testing activities.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition – High Wind Conditions

a. Inspection Scope

Since high winds were identified in the vicinity of the facility for March 6, 2012, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On March 6, 2012, the inspectors walked down the Unit 2 and Unit 3 main and offsite power transformer areas, in addition to the licensee's emergency alternating current (AC) power systems, because their safety related functions could be affected or required as a result of high winds or tornado generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. 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.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04Q & S)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 2 Division II low pressure coolant injection (LPCI) with Division I LPCI minimum flow valve out-of-service (OOS);
- 3B core spray (CS) during 3A CS OOS; and
- 2/3 emergency diesel generator (EDG) during Unit 3 EDG OOS.

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 corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Semi Annual Complete System Walkdown (71111.04S)

a. Inspection Scope

On January 10, 2012, the inspectors performed a complete system alignment inspection of the Unit 2 core spray 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 WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 8.2.1A, Unit 2 condensate pumps, elevation 469';
- Fire Zone 11.1.3, Unit 3 high pressure coolant injection (HPCI) pump room, elevation 476';
- Fire Zone 9.0A, Unit 2 diesel generator, elevation 517'; and
- Fire Zone 6.1, Unit 3 battery charger room, elevation 538'.

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 were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors verified that the licensee complied with its commitments. The inspectors observed the following activity:

- Unit 2 condenser hotwell watertight door surveillance and maintenance.

Specific documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11Q)

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

a. Inspection Scope

On March 5, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification 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 71111.11-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

On January 6, 2012, the inspectors observed activities in the control room during the return to service and testing of the Unit 2 emergency diesel generator. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

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

The performance in these areas was compared to pre established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- Unit 3 containment cooling service water; and
- Unit 3 reactor building closed cooling water.

The inspectors reviewed events such as where ineffective equipment maintenance could result in valid or invalid automatic actuations or transients 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 were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for 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 EDG and Unit 2 “B” core spray OOS;
- Operational Risk Activity – construction of scaffold in main control room panels in support of the adjustable speed drive modification;
- Unit 2 isolation condenser OOS;
- Unit 3 standby liquid control OOS for squib valve replacement; and
- Unit 2 HPCI OOS.

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 were identified.

1R15 Operability Evaluations and Functional Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Issue Report (IR) 1287702, “Supplemental Information and Issues Relating to IR 1281716;”
- IR 1309030, “NRC Concern for HPCI Venting Time;”
- IR 1298456, “MCC 38-7, Transfer Relay 3-7838-7CR3871 Needs Replacing;”
- Operability Evaluation (OE) 12-002, “Dresser Part 21 report for nitrogen relief valve 2(3)-8526 will not pass full rate flow;” and
- OE 11-006, Rev.000, “4160 V Switchgear MOC Assembly at Buses 23, 23-1, 24, 24-1, 33, 33-1, 34, 34-1.”

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.

This operability inspection constituted five samples as defined in IP 71111.15-05.

b. Findings

Failure to Report an Unanalyzed Condition that Could Significantly Degrade Plant Safety

Introduction: The inspectors identified an unresolved item regarding the failure to submit a 10 CFR 50.73(a)(2)(ii)(B) licensee event report (LER) within 60 days following discovery of an unanalyzed condition that could significantly degrade plant safety.

Description: On January 11, 2012, it was postulated in IR 1312222 that while on shutdown cooling (SDC) in Mode 3 and a loss of coolant accident (LOCA) were to occur, the SDC and LPCI common discharge piping would void resulting in flashing and pipe damage during the 40 seconds it takes for the SDC isolation valves to close on a Group 3 isolation signal. This challenges the ability of both subsystems of LCPI to inject in such a scenario. Both sub-systems of LPCI are required to be operable by technical specifications while in Mode 3. The licensee's immediate operability determination was that LPCI remained operable; however, additional analysis was required to determine if the event was plausible and if the plant was bounded by previous analysis. Corrective action assignments were generated to evaluate the condition with Exelon corporate due by January 25, 2013 (over 1 year later). Two other corrective action assignments were written to evaluate the final resolution of a similar scenario at Quad Cities Nuclear Power Station and to evaluate current operations procedures to determine if additional guidance is necessary in this postulated scenario at Dresden. All three corrective actions remained open at the end of the assessment period.

The inspectors questioned the timeliness of licensee corrective actions, in particular with respect to prompt operability and reportability of the potential unanalyzed condition, which was documented in IR 1341563. The licensee justified prompt operability after 60 days based on 1) a GE BWR Owners Group Technical Report "Effects of Voiding in emergency core cooling system (ECCS) Drywell Injection Piping," 2) the probability of occurrence of the aforementioned scenario being on the order of 1E-08 and was therefore not a credible event and did not require further analysis, and 3) the fact that preliminary results done at Quad Cities and Duane Arnold Energy Center for similar issues indicated that all operability requirements for piping were met. The licensee justified reportability as no loss of safety function occurred and therefore this issue was not reportable.

The inspectors reviewed the GE technical report and determined that the report does not apply to this scenario as the scope of review was limited to small voids existing prior to an accident or transient - not voids developed as a result of an accident or transient. Additionally, the GE technical report indicated that flashing as a result of LPCI injection would occur in both the vessel and recirculation lines. In the postulated scenario, LPCI and SDC flashing would occur upstream of the recirculation lines in the LPCI piping that is significantly smaller in diameter than the recirculation piping, 16 inches as opposed to 28 inches, respectively. The licensee indicated that they had an ongoing technical evaluation underway that would show the potential unanalyzed condition would not

challenge the ability of LPCI to inject. This analysis was not completed during the 60 day LER reportability timeframe, and at the end of the inspection period the technical evaluation was still in progress. The inspectors considered this issue an unresolved item (URI) pending completion and review of the licensee's technical evaluation. (URI 05000237/2012002-01; 05000249/2012002-01, "Failure to Report an Unanalyzed Condition that Could Significantly Degrade Plant Safety")

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- Engineering Change 372521, "Unit 2/3 Control Room heating, ventilation, and air conditioning (HVAC) System Train B CREVS RCU [control room emergency ventilation system refrigeration control unit]"

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening 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, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-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. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant 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 plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- WO 1502188, "Unexpected Half Scram on Unit 2 – Will Not Reset;"
- WO 1307761-09, "OP PMT Standby Diesel Generator Inspection;"
- WO 01412443-02, "OP PMT Air Start Regulator on D2 EDG DOS 6600-01;"
- WO 1107539-01, "D2 NDD PM Overhaul CRD B Pump;"
- WO 748391, "D2 8Y PM Disassemble and Inspect Chk Vlv 2-1301-26;"

- WO 1514515, "Re-Wire Bus (23-1/24-1) Loss of Offsite Power Alarm in MCR;" and
- WO 1188416-09, "Ops Perform SBLC Continuity Check 3B Squib Valve."

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

This inspection constituted seven post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

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 1489925-01, "D2/3 QTR TS D/G CLG WTR PMP Test For IST Program Surveillance" (IST);
- DOP 2000-180, "Drywell Sump Operation with Unit On-Line," Revision 00 (RCS);
- WO 1501336-01, "D3 45D TS 3C CCSW Alert Range Testing" (routine);
- WO1475091-01, "D3 QTR TS ADS Permissive LPCI and CS PMP Disch Press SW CAL" (routine);
- WO 1399870-01, "EM Annual B5B Portable Generator/Charger Load Test." (routine); and
- WO 1502724-01, "D3 QTR HPCI pump OPER Test and IST Surv" (routine).

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 was 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 (ASMEs) 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, 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 reactor coolant system leak detection inspection sample, and one inservice testing sample, as defined in IP 71111.22, Sections -02 and -05.

b. Findings

One finding and associated non-cited violation was identified which is discussed in Inspection Report (IR) 05000237/2012010; 05000249/2012010.

1EP2 Alert and Notification System Evaluation (71114.02)

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 plume pathway Emergency Planning Zone. The inspectors reviewed monthly

trend reports and siren test failure records from January 2010 through January 2012. 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 were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed and discussed with plant 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 plant's 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 between January 2010 and January 2012 to determine the adequacy of post drill critiques and associated corrective actions. The inspectors also reviewed a sample of the EP training records, approximately 12 records for ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. 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 were identified.

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

a. Inspection Scope

The inspectors reviewed a sample of nuclear oversight staff's 2010 and 2011 audits of the emergency preparedness program to determine that these 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 2011 biennial exercise, as well as various EP drills conducted in 2010 and 2011 in order to determine that the licensee fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities.

The inspectors reviewed a sample of EP items and corrective actions related to the facility's EP program and activities between January 2010 and January 2012 to determine whether corrective actions were completed in accordance with the sites CAP. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on March 5, 2012, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the CAP. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with EP drill aspects constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This inspection constituted one complete sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. Instrumentation review included continuous air monitors (continuous air monitors and particulate-iodine-noble-gas-type instruments) used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the Respiratory Protection Program and a description of the types of devices used. The inspectors reviewed the UFSAR, TSSs, and EP documents to identify location and quantity of respiratory protection devices stored for emergency use.

Inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus, as well as procedures for air quality maintenance.

The inspectors reviewed reported performance indicators to identify any related to unintended dose resulting from intakes of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee uses ventilation systems as part of its engineering controls (in lieu of respiratory protection devices) to control airborne radioactivity. The inspectors reviewed procedural guidance for use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation, and assessed whether the systems are used, to the extent practicable, during high-risk activities (e.g., using containment purge during cavity flood-up).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity, and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (high-efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems is consistent with licensee procedural guidance and as-low-as-is-reasonably-achievable concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluating whether the alarms and setpoints are sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and the as-low-as-is-reasonably-achievable concept.

The inspectors assessed whether the licensee had established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it is impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses are as-low-as-is-reasonably-achievable. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is as-low-as-is-reasonably-achievable. The inspectors also evaluated whether the licensee had established means (such as routine bioassay) to determine if the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or have been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

The inspectors selected several individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (loss of power, loss of air, etc.).

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings).

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the UFSAR, TSs, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle changeout). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

The inspectors reviewed the past 2 years of maintenance records for select self contained breathing apparatus units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any self-contained breathing apparatus unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the self-contained breathing apparatus manufacturer's recommended practices. For those self-contained breathing apparatuses designated as "ready for service," the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up to date, and the retest air cylinder markings required by the U.S. Department of Transportation (DOT) were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP. The inspectors assessed whether the corrective actions were appropriate for a selected

sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted one complete sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of radiation protection program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multibadging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and evaluation of and dose assessment for radiological incidents (distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee had established procedural requirements for determining when external and internal dosimetry is required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor is National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to rad-workers with respect to care and storage of dosimeters.

The licensee does not use non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee uses a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose and whether the correction factor is based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee had identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors as a passive monitoring system to determine if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspector's reviewed the licensee's 10 CFR Part 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounts for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

There were no internal dose assessments obtained using in vitro monitoring for the inspectors to review. The inspectors reviewed procedures and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (tritium, fission products, and activation products), including collection and storage of samples.

The inspectors performed a limited review on the vendor laboratory program and assessed whether the laboratory participated in an industry recognized cross-check program including whether out-of-tolerance results were resolved appropriately.

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The licensee had not performed dose assessments using airborne/derived air concentration monitoring since the last inspection.

b. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

a. Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors selected individuals who had declared pregnancy during the current assessment period and evaluated whether the licensee's radiological monitoring program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multibadging to evaluate whether the assessment was performed consistently with licensee procedures and dosimetric standards.

b. Findings

No findings were identified.

Shallow Dose Equivalent

a. Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

b. Findings

No findings were identified.

Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's neutron dosimetry program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra, (b) there was sufficient sensitivity for low dose and/or dose rate measurement, and (c) neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation Program (71124.08)

These inspection activities constitute a partial sample as defined in IP 71124.08-05.

.1 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors reviewed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable package compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for soft-sided engineered packages were consistent with the vendor's current approved procedures.

b. Findings

Introduction: A finding of very low safety significance was self-revealed following the licensee's failure to appropriately package and transport radioactive material. This finding also resulted in two associated Non-Cited Violations (NCVs) of 10 CFR 61.56(a)(3) and 10 CFR 71.5(a).

Description: On November 10, 2011, three exclusive use shipments were shipped from the licensee's facility to a disposal facility at Clive, Utah. Each shipment contained approximately 140,000 lbs of low pressure turbine casings and was shipped in soft-sided packages. The soft-sided shipping packages were then covered with tarps and secured to the truck bed with straps and tie-downs (chains).

Upon arrival at the burial site, burial facility personnel identified tears on two of three of the soft-sided shipping packages (DW-11-053 and DW-11-055). Disposal facility personnel did not identify any degradation on the third shipping package (DW-11-054). These package degradations created the potential for loss of radioactive contamination control during the shipments. However, no radioactive contamination was identified outside of the shipping package as a result of this event.

The burial site personnel also identified free-standing liquid of greater than three percent in two of the three shipping packages (DW-11-053 and DW-11-054). One of these soft-sided packages was compromised during transport and exposed to adverse weather conditions at the licensee's site prior to transport. Consequently, the water intrusion into the package could have occurred either at the licensee's facility or during transport. The other shipping package was not compromised during transit, so most likely, the water intrusion to this package occurred at the licensee's facility when it was exposed to adverse environmental conditions. Burial sites require licensees to ensure that Class-A radioactive waste arrive ready for disposal with less than one percent liquid by volume.

A licensee apparent cause evaluation determined that the licensee failed to prepare and store the radioactive shipment appropriately for transport. The evaluation also determined that the turbine casings were partially prepared and packaged for transport inside the licensee's facility. Then while awaiting shipment, the partially prepared packages were stored outside at the licensee's facility without proper protection from the environment and were subjected to rainfall. This left the soft-sided shipping packages susceptible to water intrusion while in interim storage. In addition, the licensee noted pooling of water on top of the shipping packages. The soft-sided shipping packages

were covered with tarps just prior to shipment. However, the licensee did not verify the packages and contents as being compliant with federal transportation requirements after outside storage and prior to shipment.

The use of the soft-sided package was not appropriate for transporting the package contents in that the soft-sided package was water resistant and not water tight. The package as designed allowed an access point for water to enter the package through the seams which were vulnerable to in-leakage. Secondly, the soft sided package was made of a ply of woven cloth material coated in polyethylene and felt like material that could be degraded under excessive stress and strain during conditions other than normal transportation.

During transportation of the exclusive use shipment, the drivers added tie-downs and made adjustments to the original straps. The effectiveness of the packages was substantially reduced by the addition and adjustments of straps and tie-downs. These adjustments effectively modified the shipping package design characteristics. Making field adjustments to the straps and tie-downs could facilitate or induce tears to the tarps and/or the soft-sided packaging. The drivers carrying these shipments were trained in accordance with 49 CFR on the basic knowledge of controlling shipments in transit. However, the licensee failed to specifically instruct the drivers on the need to maintain the structural integrity of the soft-sided packages.

The investigation also pointed out after passing the inclement weather, during a stop, the drivers identified tears on the outer tarps and reported these conditions to the licensee. The damage to the tarps was deemed insignificant by the licensee and the drivers were approved to proceed to the disposal facility. The licensee failed to question the full extent of the damage in order to assess the impact of degradation to the soft-sided shipping packages and package contents underneath the tarps. Thus, the degradation in shipping package integrity left the package susceptible to the loss of radioactive contamination control and to water intrusion into the packages.

As a part of their corrective action program, the licensee completed a detailed review of all radioactive material shipments and performed immediate/ interim corrective actions that included: (1) fleet review of the event and fleet applicability; (2) suspending the use of soft sided engineered shipping packages within the fleet; (3) initiated and performed an apparent cause evaluation of the event; (4) intercepted and inspected Dresden's turbine rotor elements on rail cars that were being shipped to Clive; and (5) all large bulk item shipments to be peer checked prior to shipment.

Analysis: The failure to appropriately package and transport radioactive material was a performance deficiency as defined in IMC 0612 Appendix B, Issue Screening. The inspectors reviewed the guidance in IMC 0612, Appendix E, Examples of Minor Issues, but did not identify any examples similar to the performance deficiency. However, the inspectors determined that the finding was more than minor because it affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain. Specifically, the loss of soft-side package integrity and the introduction of free-standing liquid inside the packaging(s) could lead to unnecessary radioactive contamination in the public domain and adversely impact the handling of the packages at the disposal site.

This failure was within the licensee's ability to foresee and correct, and should have been prevented; specifically, a similar event of minor safety significance occurred on a shipment to Clive Burial Site in 2011 from a sister plant (Quad Cities IR No. 01228709). The finding was not subject to traditional enforcement since the incident did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

This finding was assessed using IMC 0609, Attachment D for the Public Radiation Safety Significance Determination Process (SDP) and determined to be of very low-safety significance (Green). The inspectors determined that the finding did not involve the radioactive effluent release program or the radiological environmental monitoring program. The finding did involve the transportation of radioactive material. However, no external radiation levels or surface contamination levels were exceeded, the finding did not involve the certificate of compliance, and there was no failure to make notifications or provide emergency information. The finding did involve a breach of the package during transit. However, there was no loss of package contents. Specifically, disposal facility personnel performed radiological surveys and determined that there was no spread of radiological contamination as a result of compromised transport packages during the transit to the burial site. The finding did involve a low-level burial ground non-conformance. However, there was no issue with waste classification.

The inspector reviewed IMC 0612, Appendix F, example of cross-cutting aspects, and determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution (P.2(b)). The licensee did not effectively implement industry operating experience to ensure the effective use of soft-sided packaging(s).

Enforcement. Two violations of regulatory requirements were associated with this event. Specifically, 10 CFR 71.5(a) states, in part, "each licensee who transports licensed material outside the site of usage, as specified in the NRC license, or where transport is on public highways, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the DOT regulations in 49 CFR Parts 107, 171 through 180, and 390 through 397, appropriate to the mode of transport."

Specifically, 49 CFR 173.24(b)(2), states, in part, "each package used for the shipment of hazardous materials under this subchapter shall be designed, constructed, maintained, filled, its contents so limited, and closed, so that under conditions normally incident to transportation... the effectiveness of the package will not be substantially reduced..."

Contrary to the above, on November 16, 2011, the licensee failed to ensure the effectiveness of the packages as required by DOT regulations 49 CFR Part 173 that resulted in the loss of containment of general design packages. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as an NCV, in accordance with Section 2.3.2 of the NRC Enforcement Policy. (**NCV 05000237/2012002-02; 05000249/2012002-02**; "Failure to Ensure the Effectiveness of Packages as required by DOT Regulations")

Title 10 CFR 61.56(a)(3) states, in part, "the following requirements are minimum requirements for all classes of waste and are intended to facilitate handling at the disposal site and provide protection of health and safety of personnel at the disposal

site; in that solid waste containing liquid shall contain as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1 percent of the volume.”

Contrary to the above, on November 16, 2011, the licensee failed to ensure that packages containing solid waste that were offered for transportation contained as little free standing and noncorrosive liquid as reasonably achievable, but in no case the liquid exceed 1 percent of the volume. Specifically, the packages with the identification numbers DW-11-053 and DW-11-054 were found to have 7.3 cubic feet of unexpected liquid in each package, which was approximately 3.2 percent of the waste volume. Because this violation was of very low safety significance and it was entered into the licensee’s corrective action program as IR 1291418, “Turbine Retrofit Lower Casing Shipment,” this violation is being treated as an NCV, in accordance with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000237/2012002-03; 05000249/2012002-03; “Failure to Ensure Packages Containing Solid Waste Contain as Little Free Standing and Noncorrosive Liquid as Reasonably Achievable”)**

.2 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- DW-11-053 - Turbine Lower Casing;
- DW-11-054 - Turbine Lower Casing; and
- DW-11-055 - Turbine Lower Casing.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

a. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

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 PI for Unit 2 and Unit 3 for the period from the first quarter 2011 through the fourth quarter 2011. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC Integrated IRs for the period of January through December 2011 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 were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for Unit 2 and Unit 3 for the period from the first quarter 2011 through the fourth quarter 2011. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC Integrated IRs for the period January through December 2011, 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 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 2011 through the fourth quarter 2011. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC Integrated IRs for the period of January through December 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR 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 were identified.

.4 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise PI for the period from the first quarter 2011 through fourth quarter 2011. 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 6, dated October 2009 were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during predesignated control room simulator training sessions, performance during the 2011 biennial exercise, and performance during other drills. 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 were identified.

.5 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the first quarter 2011 through fourth quarter 2011. 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 6, dated October 2009 were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2011 biennial exercise and other drills; and revisions of the roster of personnel assigned to key emergency response organization positions. 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 were identified.

.6 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the first quarter 2011 through fourth quarter 2011. 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 6, dated October 2009 were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; and results of periodic ANS operability tests. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one alert and notification system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.7 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity PI for Dresden Nuclear Power Station Units 2 and 3 for the period from the first quarter 2011 through the fourth quarter 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99 02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009 to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's reactor coolant system chemistry samples, TS requirements, issue reports, event reports, and NRC Integrated IRs to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two reactor coolant system specific activity samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; 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 Attachment to this report.

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 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 were identified.

.3 Selected Issue Follow up Inspection: Control of Scaffolding

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee scaffolding program. In particular, the inspectors focused on the licensee's ability to monitor, track, and evaluate

temporary scaffolds installed in the plant. A selection of IRs concerning scaffolds were reviewed to ensure that the full extent of the conditions were identified, appropriate evaluations were performed, and appropriate corrective actions were specified, prioritized, and completed. The inspectors interviewed the scaffolding coordinator, reviewed licensee scaffold procedural requirements, and performed various plant walkdowns. This inspection effort represented one sample. The documents reviewed are listed in the Attachment to this report.

b. Observations

The inspectors noted several programmatic weaknesses in the licensee's control of temporary scaffolding. In particular, that the licensee and contractors have two separate scaffold tracking databases in which the contractors' scaffolds were not readily shared with or reviewed by the licensee; the licensee's maintenance scaffold log has no readily apparent notification of temporary scaffolds approaching the 90-day limit without having a 10 CFR 50.59, "Changes, Tests, and Experiments," evaluation performed; and no formal scaffold training is provided to the scaffold coordinator. These weaknesses have routinely inhibited the ability of the licensee to track and monitor temporary scaffolds built in the plant. This has led to numerous scaffolds being identified by the licensee as installed over 90 days without a 50.59 evaluation. Upon identification, these scaffolds were quickly removed or had a 50.59 evaluation performed. None of the temporary scaffolds over 90 days old that were reviewed by the inspectors impacted any safety related equipment.

The inspectors identified one scaffold in the licensee's database that had been installed on the Unit 3 torus catwalk near Bay 2 in 2010. No required 50.59 evaluation had been performed. Further licensee investigation revealed that the scaffold was actually a work platform that was no longer in the plant. The associated work order task to remove the scaffold was never closed and the actual removal date was unknown. IR 1331002, "Scaffold Installed Longer than 90 Days without 50.59," was written to address the issue.

The licensee has taken various corrective actions including, but not limited to, selecting a new scaffold coordinator, performing monthly maintenance scaffold log reviews as opposed to every 90 days, and requesting licensee contractors to readily share their scaffolding database and incorporating that information into the licensee's maintenance scaffold log. At the end of the assessment period, these corrective actions have not yet proven fully effective. In particular, the inspectors identified a teletower scaffold in the Unit 2 SBO diesel room that both straddled and was in contact with the Unit 2 SBO diesel generator jacket cooling water pipes. Additionally, no labeling was present on the scaffold. IR 1346496, "NRC ID: Teletower in U2 SBO Diesel Room Touching Piping" was written to address the issue. The inspectors will continue to monitor the licensee's scaffolding program as corrective actions are implemented.

c. Findings

No findings of significance were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Unresolved Item 05000237/2011002-01; 05000249/2011002-01; "Satisfactory Performance of a Surveillance Test Procedure That Was Later Demonstrated to be Not Capable of Being Performed"

The inspectors reviewed WO 902046-01, "D2/3 Annual PM Control Room HVAC System Smoke Detector Test," performed on November 25, 2008. This work order was to perform surveillance test DFPS 4183-14, "Unit 2/3 Control Room Heating, Ventilation, and Air Conditioning Smoke Detector Annual Surveillance Procedure," Revision 9. The test results identified that Alarm 2/3 2223-89-C1, "Control Room/East Turbine Building Smoke Detector Trouble," would not alarm when the following detectors were sprayed with test gas:

- 2/3-8941-017, located in the control room main return duct;
- 2/3-8941-018, located in the control room HVAC equipment room train B exhaust duct; and
- 2/3-8941-013, located on the main control room HVAC outside air supply duct.

The 2/3-2223-89-C1, "Control Room/East Turbine Building Smoke Detector Trouble," alarms at Panel 2/3-2223-89 in the Unit 2 switchgear room if a detector loses power. Other alarms at Panel 2/3-2223-89 and in the Control Room alarmed when the detectors were sprayed with test gas. The licensee wrote IR 849580, "Problems Encountered during Performance of DFPS 4183-14," to document the issue.

The problem with the test procedure, in this case, was that per DFPS 4183-14 the 2/3 2223-89-C1 alarm was expected to annunciate when the detector was sprayed with test gas. The 2/3-2223-89-C1 alarm was not designed to annunciate when sprayed with test gas but only when the detector lost power. This was not recognized by the licensee at the time even though the 2/3-2223-89-C1 alarm had not annunciated during the performance of DFPS 4183-14 since the first performance of the surveillance test in 2006.

The licensee generated WO 1191692-01, "Problems Encountered During Performance of DFPS 4183-14," to troubleshoot the failure of 2/3-2223-89-C1 to alarm when sprayed with test gas. The result of this work order was that all three smoke detectors needed to be replaced. This was documented in IR 957560, "Three Smoke Detectors Require Replacement." IR 957560 stated that the scope of work requested was to touch jumper between terminal 9 and 10 of each detector to determine if annunciator 2/3-2223-89-C1 alarmed. The author of the IR stated that annunciator 2/3-2223-89-C1 alarmed for each smoke detector and, therefore, the detectors were bad and needed to be replaced. In this case, the troubleshooting procedure did not identify that the cause of the failure of the 2/3-2223-89-C1 alarm to annunciate was a design issue and not an equipment issue. This was not recognized by the licensee at the time.

However, surveillance test DFPS 4183-14 was performed again, per WO 1191661-01, "D2/3 Annual PM Control Room HVAC System Smoke Detector Test, on February 3, 2010, this time with no issues regarding annunciator 2/3-2223-89-C1. The inspectors questioned how this could happen since the detectors, identified as bad in IR 957560 had yet not been replaced and no work had been performed on any of the smoke detectors in question. The licensee performed fact finding based on the inspectors questions why this surveillance test passed when it should not have. The

inspectors discussed the fact finding results with the licensee manager that performed the fact finding on April 6, 2011. The licensee found no explanation why the test passed. The individual that performed the test stated that the performance of that specific test could not be recalled.

The inspectors reviewed the circumstances surrounding the performance of WO 1191661-01, "D2/3 Annual PM Control Room HVAC System Smoke Detector Test, on February 3, 2010. The inspectors were unable to determine why the test passed with no issues on February 3, 2010. The inspectors determined that surveillance test procedure DFPS 4183-14, "Unit 2/3 Control Room HVAC Smoke Detector Annual Surveillance Procedure," Revision 9, was inadequate as written. The inspectors concluded that the finding was minor since the outcome of the surveillance test regarding the availability or reliability of the smoke detectors was not impacted by this specific procedural inadequacy. The satisfactory performance of DFPS 4183-14 on February 3, 2010, was unexplained. This URI is closed.

.2 (Closed) Unresolved Item 05000237/2011004-05; 05000249/2011004-05; "Alert Declared Due to Chemical Spill"

Inadequate Basis in 10 CFR 50.59 Evaluation for Installation of Hypochlorite System and Failure to Document a 10 CFR 50.59 Evaluation for Changes Made to the Facility

Introduction: The inspectors identified a Severity Level IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments" having very low safety significance (Green) for the licensee's failure to perform an adequate safety evaluation review for changes made to the facility.

Description: At some point in the past the licensee installed tanks containing sodium hypochlorite and HEDP, (a strong acid) in close proximity to one another. The licensee was unable to retrieve documentation of the existing hypochlorite chemical treatment system. The licensee estimated this change to the facility occurred in 1998 based on drawing change dates. When these chemicals mix, they would produce an on-site release of chlorine gas, as occurred during the Alert referenced in the URI, which could potentially overcome the control room operators. This accident scenario had not been previously considered in the UFSAR and was not bounded by the evaluation of chlorine gas released from off-site sources. Therefore, the licensee failed to provide an adequate basis as to why the installation with a sodium hypochlorite tank in close proximity to HEDP did not create conditions for an accident of a different type than any previously evaluated in the UFSAR.

Dresden Station was committed to Regulatory Guide (RG) 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," Revision 0, in UFSAR, Section 1.8. This RG identified a detailed list and quantity of chemicals considered hazardous to control room habitability, which included chlorine gas. This RG required a detailed analysis of the effects of a hazardous substance released (such as chlorine gas) on the habitability of the control room.

Specifically, Appendix B of RG 1.78 required a detailed diffusion analysis for release of hazardous chemicals (e.g., chlorine) to assess the impact on control room habitability. Further, step C.3 of RG 1.78 stated any hazardous chemicals stored on-site should be

accompanied by instrumentation that will detect its escape, set off an alarm, and provide a readout in the control room. Step C.12 of RG 1.78 required that concurrent chemical release of container contents during an earthquake, tornado or flood should be considered for chemical container facilities that are not designed to withstand these natural events. The inspectors could not assess if the above requirements of RG 1.78 were met because of the lack of documentation.

Without automatic alarm systems, the inspectors concluded, in the event of an on-site generation of chlorine gas, the control room operators may not have sufficient notification to preclude chlorine intrusion into the control room. The inspectors could not determine the consequences of this postulated event because the licensee had not completed a detailed diffusion analysis for the potential chlorine gas generated as discussed in Appendix B of RG 1.78. Therefore, the inspectors concluded that the storage of bulk HEPD in proximity to the sodium hypochlorite tank created conditions for a different type of accident than any previously considered in the UFSAR.

On December 14, 2011, the inspectors questioned the Shift Manager if the station had evaluated the potential for damage to the tanks from earthquake or missile strikes and whether an operability evaluation for the control room envelope had been performed. The Shift Manager stated that he did not know and wrote IR 1302573, "NRC Senior Resident Inspector Question on Chemical Tanks and CREVS [control room emergency ventilation system]." The licensee's preliminary operability evaluation determined that none of the tanks were tall enough to tip over during a design basis earthquake and that the height of the fluid was not a concern. In addition, the licensee determined that the coefficient of friction between the concrete and the tanks would prevent the tanks from sliding. The licensee also determined that the probability of a missile strike was on the order of E10-7 or less. The licensee planned to perform a more detailed operability evaluation. On December 15, 2011, the licensee drained the sodium hypochlorite tanks to a tanker truck until a more permanent solution could be found.

The licensee performed Engineering Technical Evaluation (EC) 387018, "Control Room Habitability Evaluation for Chlorine Gas Release at the Crib House," Revision 1. The technical evaluation determined that the control room envelope was safe from a worst case toxic exposure to chlorine gas as long as Sodium Hypochlorite volume remained less than 45 percent of total (2 tank) volume (7,197 gallons). The licensee also performed EC 387073 to determine the historic operability of the sodium hypochlorite tanks to include seismic, wind, and missile considerations. The licensee determined in EC 387073 that the tanks would not have been affected by wind, seismic, or missile impacts with a level of sodium hypochlorite equal to or greater than the level necessary to make the control room envelope inoperable identified in EC 387018.

Analysis: The inspectors determined that the failure to provide an adequate basis for changes made to the facility in accordance with 10 CFR 50.59 was a performance deficiency warranting a significance evaluation. Specifically, the licensee failed to provide an adequate basis as to why changes made, i.e. installing the two chemical tanks in close proximity to one another, did not create conditions for a different type of accident than any previously considered in the UFSAR.

In accordance with the NRC Enforcement Policy section 6.1.d.2, this finding was categorized as Severity Level IV violation because it was an example where the licensee

failed to provide a safety evaluation for a plant design change and the underlying technical issue was evaluated under the SDP as having a very low safety significance.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the SDP. However, if possible, the underlying technical issue is evaluated under the SDP to determine the severity of the violation. In this case, the underlying technical issue affected the Barrier Integrity Cornerstone. The finding was evaluated under the SDP using NRC's IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," and the inspectors answered "yes" to the question in Table 4a; "Does the finding represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere?" The SDP required a phase 3 analysis to resolve this type of finding. However, after consultation with a Region 3 Senior Reactor Analyst it became apparent that no SDP methods or tools exist to determine the significance of the finding. Therefore, the finding was not suitable for evaluation using the SDP. As a result, the risk significance was established in accordance with the qualitative criteria of Appendix M (dated December 22, 2006) of IMC 0609. Specifically, the qualitative decision-making attribute from Table 4.1 of Appendix M, "Finding can be bounded using qualitative and/or quantitative information?" was applicable to this finding. The licensee performed two quantitative engineering evaluations regarding this finding. The first (EC 387018) determined the minimum level of sodium hypochlorite stored in the tanks necessary that, if it were to completely interact with the HEPD and completely release all of the contained chlorine, would render the control room envelope inoperable. The second (EC 387073) determined that the tanks would not have been affected by wind, seismic, or missile impacts with a level of sodium hypochlorite equal to or greater than the level necessary to make the control room envelope inoperable identified in EC 387018. Therefore, based upon a qualitative measure of risk determined in accordance with Appendix M, NRC management concluded that the issue was of very low safety significance (Green).

This finding has no cross-cutting aspect because it does not represent current licensee performance.

Enforcement: Title 10 CFR 50.59(b)(1) (1997, 1998) stated, in part, that the licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this section, to the extent that these changes constitute changes in the facility as described in the safety analysis report or to the extent that they constitute changes in procedures as described in the safety analysis report. These records must include a written safety evaluation which provides the bases for the determination that the change, test, or experiment does not involve an unreviewed safety question.

Title 10 CFR 50.59 (a)(2)(ii) (1997, 1998) stated, in part, that a proposed change, test, or experiment shall be deemed to involve an unreviewed safety question if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created.

Contrary to the above, from approximately 1998, through December 15, 2011, the licensee failed to maintain records of a change to the facility when it installed HEPD tanks in proximity to a sodium hypochlorite tank. The licensee did not maintain records of a written safety evaluation which provided the basis for the determination that the change did not involve an unreviewed safety question. Specifically, the accident

scenario involving an on-site release of chlorine gas overcoming the control room operators had not been previously evaluated in the UFSAR and was not bounded by the UFSAR evaluation of chlorine released from off-site sources.

In accordance with the Enforcement Policy, this violation of the requirements of 10 CFR 50.59 was classified as a Severity Level IV Violation because the underlying technical issue was of very low safety significance. Because this non-willful violation was non-repetitive, and was captured in the licensee's CAP (IR 1302573), it is considered a NCV consistent Section 2.3.2 of the Enforcement Policy. **(NCV 05000237/2012002-04; 05000249/2012002-04, "Inadequate Basis in 10 CFR 50.59 Evaluation for Installation of Hypochlorite System")**

The finding is evaluated separately from the traditional enforcement violation and, therefore, is being assigned a separate tracking number **(FIN 05000237/2012002-05; 05000249/2012002-05, "Failure to Document a 10 CFR 50.59 Evaluation for Changes Made to The Facility")**. As part of its corrective action, the licensee entered the issue into its corrective action program (IR 1302573) and performed EC evaluations EC 38018 and EC 387073 which resulted in the draining of the sodium hypochlorite tanks to a volume of less than 45 percent for both tanks until the historical operability of the system could be determined.

URI 05000237/2011004-05; 05000249/2011004-05, "Alert Declared Due to Chemical Spill" is closed.

.3 Unit 2 Control Rod Drive Flow Control Valve Failed Closed Due to Inadequate Work Order Instructions

Introduction: A finding of very low safety significance was self-revealed for the failure to properly install instrument air tubing that affected the operation of both of the Unit 2 Control Rod Drive (CRD) Flow Control Valves (FCV).

Description: On January 31, 2012, both Unit 2 CRD flow control valves failed closed when an instrument air line leading into the Unit 2 CRD Flow Control Valve A/B Selector Valve (2-302-6B) separated removing control air to both valves. This condition was identified when the 902-5 F-3 Rod Drive Temperature High alarm was received in the control room. The separated line was made of plastic. An operator, with instrument maintenance department assistance, reconnected the line within 31 minutes from the time the alarm was received. The licensee wrote IR 1321011, "Unit 2 CRD FCV Failed Closed," and performed a prompt investigation.

The inspectors reviewed the licensee prompt investigation. The licensee's investigation stated that the operators entered DOA 0300-01, "Control Rod Drive System Failure," Revision 21, but did not state whether the procedure had been performed correctly. The inspectors reviewed DOA 0300-01 and interviewed the nuclear station operator at the time of the event. The inspectors concluded that DOA 0300-01 was entered and performed correctly.

The licensee also wrote IR 1323295, "Improper Installation of U2 CRD FCV Selector Switch Tubing," and IR 1324945, "NOS ID – Issue with Tech Justification for Plastic Air Line." These documents identified that the failed Unit 2 CRD Flow Control Valve A/B Selector Valve (2-302-6B) had been replaced on December 1, 2011,

via WO 1487301-01. The equipment installed under this work order was neither safety-related nor augmented quality. However, plant design specification K-4080 Section 1502.1.b7 stated, neither plastic tubing nor plastic piping are acceptable for instrument and control piping except where specified. The newly replaced 2-302-6B had plastic tubing. Procurement Evaluation (PE) 56060 was previously prepared which specified that the new tubing was plastic and Attachment 4 of PE 56060 required the tubing to be installed using a barbed plastic connector to hold the connection in place where 5/32 inch tubing connected with 1/4 inch tubing. However, PE 56060 was prepared for a previous model number of the part used for 2-302-6B. When 2-302-6B was replaced in December 2011, a new model number was used which did not have the PE 56060 attached to it. The work planner did not have access to PE 56060 when WO 1487301 was prepared. The new model number still required the barbed connector. The WO 1487301-01 instructions did not specify the use of this barbed connector and it was not installed. The point at which the barbed connector was not installed was the point at which the tubing failed.

Analysis: The inspectors determined that the failure to have adequate maintenance instructions to install 2-302-6B with plastic tubing connectors was contrary to PE 56060 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 equipment performance of the Cornerstone Objectives and Attributes Tables of Manual Chapter 0612, Appendix B, dated January 1, 2010, and affected the cornerstone objective of to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to install the plastic piping connectors resulted in the separation of the plastic instrument air tubing resulting in the Unit 2 CRD FCVs to fail closed. In addition, DOA 0300-01, Step D.9.d, stated, in part, that if CRD flow control is lost and cannot be regained then reduce load and manually scram the reactor. The inspectors concluded, after interviewing the control room operator at the time of the valve failure, that the reason for the valve failure was identified and corrected in a timely manner. However, if the non-licensed operator in the field had not been able to quickly identify the source of the problem and resolve it there would have been no choice but to scram the reactor.

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 inspectors determined that the finding did not result in both the likelihood of reactor trip and the likelihood that mitigation equipment or functions would not have been available. Therefore, the finding screened as having very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance, Resources, because the licensee did not have complete, accurate, and up-to-date design documentation. Specifically, the failure to attach PE 56060 to the most current part number necessary to replace 2-302-6B resulted in the failure to include instructions to install the plastic piping connectors in the work order that was used to replace 2-302-6B. This resulted in the separation of the plastic instrument air tubing and the Unit 2 CRD FCVs failing closed. (H.2(c))

Enforcement: No violation of regulatory requirements occurred.

(FIN 05000237/2012002-06; 05000249/2012002-06, "Unit 2 Control Rod Drive Flow Control Valve Failed Closed Due to Inadequate Work Order Instructions") The licensee entered this into the corrective action program as IR 1323295, "Improper Installation of U2 CRD FCV Selector Switch Tubing." The licensee made temporary repairs to the 2-302-6B switch and wrote a work request to make final repairs. The licensee also wrote work requests to inspect the Unit 3 selector switch. The licensee also wrote a procedure change request to review DOA 0300-01, "Control Rod Drive System Failure," to clarify the decision to scram upon flow control valve failure. The licensee generated a corrective action to tie PE 56060 to the new 2-302-6B model number. The licensee planned to prepare an equipment apparent cause evaluation (EACE). Additional corrective actions should result from the EACE.

.4 Inadequate Work Instructions Leads to Failure of Secondary Containment Interlock

Introduction: A finding of very low safety significance and associated non-cited violation of TS Section 5.4.1 was self-revealed because the work instructions associated with WO 1450006-01, "D2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," were inadequate.

Description: On December 21, 2011, the licensee performed WO 1450006-01, "D2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," to ensure the reactor building interlock doors were functioning properly. During the performance of this work, connection point A19 was lifted to measure the in-line current of the door magnet for reactor building interlock door 52 (EPN 2-5850-52). By lifting connection A19, turbine building interlock door 16 (EPN 2-5850-16) lost power to its locking magnets. This loss of power caused both doors of the Unit 2 interlock to be open (door 52 was being held open and did not lose power due to this). This caused alarm 902-4 E-19, RX/TURB 517 INTLK DOORS INOP/BYP, to occur. This condition existed for nine seconds. The licensee entered into TS 3.6.4.1, Condition A, "Secondary Containment Inoperable in Mode 1, 2, or 3," and resulted in a subsequent event notification report, Event Number 47540. The licensee subsequently determined that the differential pressure between the reactor building and the turbine building never exceeded the TS limit of -.25 in Hg and retracted the event notification. The inspectors concurred with the licensee's retraction.

The licensee performed a root cause investigation and determined that the instructions for WO 1450006 were inadequate because the instructions required the lifting of an electrical connection at the wrong point. The licensee's root cause evaluation determined that the work planner copied the instructions for the Unit 2 task from the Unit 3 work instructions and did not ensure that all the instructions unique to Unit 2 were correct.

Analysis: The inspectors determined that the failure to use adequate work instructions for an activity affecting quality was contrary to TS 5.4.1 and was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Barrier Integrity Cornerstone attribute of configuration control and affected the cornerstone objective of maintaining the functionality of containment. Specifically, the use of inadequate work instructions resulted in the temporary failure of the secondary

containment boundary between the Unit 2 Reactor Building and the Unit 2 Turbine Building.

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 Barrier Cornerstone because the finding affected the secondary containment. The inspectors answered all four questions 'No' which resulted in the finding screening as having very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not ensure that human error techniques such as self and peer checking was used during the creation of the work package. Specifically, the licensee's root cause report stated that the root cause of the problem was the lack of rigor in the application of technical human performance fundamentals by a work planner. The inspectors questioned what the was the specific requirement not followed by the work planner licensee and management personnel stated that the work planner failed to adequately self-check and get a peer check on the completion of the preparation of the work package. (H.4(c))

Enforcement: TS Section 5.4.1 states, in part, that written procedures shall be established, implemented, and maintained covering applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, issued February 1978. Paragraph 9 of this Regulatory Guide states, in part, that procedures for performing maintenance on safety-related equipment should be properly prepared and activities shall be performed in accordance with these procedures. The licensee established WO 1450006-01, "D2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," as the implementing procedure for performing surveillance testing of the Unit 2 secondary containment door interlocks.

Contrary to the above, on December 21, 2011, maintenance procedure WO 1450006-01, "D2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," was inadequate. Specifically, the procedure did not contain the correct designation for a lead that was lifted while performing the surveillance test. The licensee's corrective actions included disciplining the maintenance planner and having each of the maintenance department heads prepare human performance improvement plans. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as IR 1305358 this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000237/2012002-07; 05000249/2012002-07, "Inadequate Work Instructions Leads to Failure of Secondary Containment Interlock")**

.5 Failure to Make a Required 8 Hour Event Report Per 10 CFR 50.72(b)(3)(v)(D) and APRMs 4, 5, and 6, Not Within The Technical Specification limits Prescribed In Technical Specification 3.3.1.1 Table 3.3.3.3-1, 2.b and c

Introduction: The inspectors identified a Severity Level IV NCV and associated finding of very low safety significance of 10 CFR 50.72(b)(3)(v)(D), "Immediate Notification Requirements for Operating Nuclear Power Reactors," for the failure to report an event to the NRC within 8 hours where an event or condition that at the time of discovery could

have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

Description: On February 19, 2012, the licensee entered TS 3.3.1.1 because the flow biased neutron flux-high and the fixed neutron flux-high functions for average power range monitor (APRMs) channels 4, 5, and 6 were inoperable simultaneously. The APRMs 4, 5, and 6 impacted all of Trip System B of the reactor protection system. With APRMs 4, 5, and 6, all inoperable at the same time the reactor would not scram on flow biased neutron flux-high or fixed neutron flux-high within the TS limits.

The licensee performed a down power to perform a rod pattern adjustment. The licensee failed to respond in a timely manner to a computer alarm warning that the APRM Gain Adjustment Factor (AGAF) settings were not within limits. The Nuclear Station Operator, the Unit Supervisor, the Reactivity Manager, and the Qualified Nuclear Engineer were all aware that the alarm had sounded but no action was taken to verify the extent of or correct the problem until after the next shift took over. When the problem was identified the oncoming shift verified that the time period where APRMs 4, 5, and 6 exceeded the TS 3.3.1.1 limit did not exceed the TS Limiting Condition for Operation time limit.

Analysis: The inspectors determined that the failure to report within 8 hours an event where an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident, as required by 10 CFR 50.72(b)(3)(v)(D), was a performance deficiency.

The inspectors reviewed this issue in accordance with IMC 0612, Appendix B, and the discussion for Block 7, Figure 2, paragraph 2.a.v., and determined that a failure to report was an example of a violation that could impact the regulatory process and was subject to Traditional Enforcement.

The inspectors determined that the underlying technical issue involved the inability to scram Unit 2 on flow biased neutron flux-high or fixed neutron flux-high functions within the TS limits prescribed in TS 3.3.1.1 Table 3.3.3.3-1, 2.b and c. Although the licensee identified the issue before the TS Limiting Condition for Operation expired a more timely identification and resolution of the problem might have prevented entering the TS at all. The inspectors determined that the issue was more than minor, because if left uncorrected it would have had the potential to lead to a more significant safety concern. Using IMC 0609, Table 4a, "Characterization Worksheet for IE, MS, and BI Cornerstones," the inspectors determined that the finding had very low safety significance because they answered 'No' to all five questions contained in Column 2 of the Table 4a worksheet. As a result, the inspectors determined that the finding had very low safety significance (Green). The inspectors then asked "Does the finding represent a loss of system safety function?" The inspectors concluded through discussions with a Region III Senior Reactor Analyst that this question referred to a loss of the entire reactor protection system which was not the case. Only the flow biased neutron flux-high and fixed neutron flux-high safety functions were impacted.

In accordance with the NRC Enforcement Policy, this violation was categorized as Severity Level IV because it was an example where the licensee failed to make a report required by 10 CFR 50.72. Specifically, it represented a failure to identify a loss of

safety function. The inspectors evaluated the underlying technical issue utilizing the SDP and determined the finding to be of very low safety significance.

The inspectors also determined that the contributing cause that provided the most insight into the performance deficiency affected the cross-cutting area of Problem Identification and Resolution, including properly classifying, prioritizing, and evaluating for operability and reportability, conditions adverse to quality. (P.1(c))

Enforcement: Title 10 CFR 50.72(b)(3)(v)(D), "Immediate Notification Requirements for Operating Nuclear Power Reactors," requires, in part, that the licensee shall report within 8 hours an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

Contrary to the above, on February 19, 2012, the licensee entered TS 3.3.1.1 because the flow biased neutron flux-high and the fixed neutron flux-high functions for APRMs 4, 5, and 6 were inoperable simultaneously and did not report this condition within 8 hours. The APRMs 4, 5, and 6 impacted all of Trip System B of the reactor protection system. With APRMs 4, 5, and 6, all inoperable at the same time the reactor would not scram on flow biased neutron flux-high or fixed neutron flux-high within the TS limits prescribed in TS 3.3.1.1 Table 3.3.3.3-1, 2.b and c. This was an event that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The licensee had not prepared any corrective actions by the end of the inspection period.

In accordance with Section 6.9.d.9 of the Enforcement Policy, the violation was classified as Severity Level IV because it was an example where the licensee failed to make a report required by 10 CFR 50.72; and the underlying technical issue was evaluated by the SDP and determined to be of very low safety significance. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's corrective action program as IRs 1328879, 1341456, and 1344970, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (**NCV 05000237/2012002-08**; "Failure to Make a Required 8 Hour Event Report Per 10 CFR 50.72(b)(3)(v)(D)")

This finding was evaluated separately from the Traditional Enforcement violation; therefore, the finding was assigned a separate tracking number.

(**FIN 05000237/2012002-09**; "APRMs 4, 5, and 6, Not Within The TS limits Prescribed In TS 3.3.1.1 Table 3.3.3.3-1, 2.b and c")

.6 (Closed)Licensee Event Report 05000237;05000249/2011-004-00, Personnel Error Results in Control Room Emergency Ventilation Air Conditioning System Inoperability"

The inspectors reviewed the subject LER to evaluate the accuracy, appropriateness of corrective actions, any violations of requirements, and potential generic issues.

On October 24, 2011, during Unit 2 refueling activities, two electrical maintenance technicians performing a clearance boundary safety verification opened a Bus 23 potential transformer (POT) fuse drawer causing an undervoltage load shed signal that resulted in the inoperability of the CREV air conditioning system. The Bus 23 POT fuse

drawer was subsequently closed and plant systems returned to their original configuration.

Following the event, the licensee determined the cause was personnel error. Corrective actions taken included an electrical maintenance department clock reset and stand down to discuss the event and consequences of taking actions in the plant without proper guidance. Further licensee corrective actions involved performing an evaluation of the implementation of robust barriers for bus pot fuse compartments.

A self-revealed finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was previously documented as NCV 05000237/2011005-01 for failure to follow clearance order instructions and operating plant equipment without a procedure.

Documents reviewed in this inspection are listed in the Attachment to this report. This LER is closed.

This event follow up review by the inspectors constituted a single inspection sample as defined in IP 71153-05.

40A5 Other Activities

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

a. Inspection Scope

The inspectors verified that the onsite documentation, system hardware, and licensee actions were consistent with the information provided in the licensee's response to NRC Generic Letter (GL) 2008-01, "Managing Gas Accumulation in ECCS, Decay Heat Removal (DHR), and CS Systems." Specifically, the inspectors verified that the licensee has implemented or was in the process of implementing the commitments, modifications, and programmatically controlled actions described in the licensee's response to GL 2008-01. The inspection was conducted in accordance with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in ECCS, DHR, and CS Systems (NRC GL 2008-01)," and considered the site-specific supplemental information provided by Office of Nuclear Reactor Regulations (NRR) to the inspectors. The inspectors focused their review on the HPCI and core spray systems.

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

b. Inspection Documentation

The selected TI areas of inspection were licensing basis, design, testing, and corrective actions. The documentation of the inspection effort and any resulting observations are below.

- (1) Licensing Basis: The inspectors reviewed selected portions of licensing basis documents to verify that they were consistent with the NRR assessment report and that they were processed by the licensee. The licensing basis verification included the verification of selected portions of TS, TS basis, UFSAR, and Technical

Requirements Manual (TRM). The inspectors noted that the licensee had not updated the UFSAR to reflect the analysis performed in response to GL 2008-01 to demonstrate the capability of the subject systems to shut down the reactor, maintain it in a safe shutdown condition, and prevent or mitigate the consequences of an accident with respect to potential gas accumulation. This issue had been previously identified by the licensee during their Functional Area Self-Assessment (FASA) in preparation for this inspection and was being tracked by the licensee in the CAP per IR1316097.

The inspectors also verified that applicable documents that described the plant and plant operation, such as calculations, piping and instrumentation diagrams (P&IDs), procedures, and CAP documents, addressed the areas of concern and were changed if needed following plant changes. The inspectors also confirmed that the frequency of selected surveillance procedures were at least as frequent as required by TSs. In addition, the inspectors confirmed the licensee had implemented a periodic monitoring program to monitor other gas susceptible locations via ultrasonic testing (UT) as part of their resolution to GL 2008-01. The licensee's basis for the UT periodicity was, in part, the results of the examinations performed up to the timeframe of this inspection. Finally, the inspectors also confirmed that the licensee's CAP captured the commitment to support the industry Technical Specification Task Force Traveler (TSTF) and NEI Gas Accumulation Management Team activities regarding resolution of generic TS issues, evaluate the resolution of the TSTF, and submit a license amendment request, if deemed necessary based on this evaluation, within 180 days following NRC approval of the TSTF. This commitment was tracked in the CAP per IR 831868.

- (2) Design: The inspectors reviewed selected design documents, performed system walkdowns, and interviewed plant personnel to verify that the design and operating characteristics were addressed by the licensee. Specifically:
- (a) The inspectors assessed the licensee's efforts for identifying the gas intrusion mechanisms that apply to the licensee's plant and noted one example where the licensee did not initially recognize a potential gas intrusion mechanism. Specifically, the SDC system design and operation may not preclude the formation of steam voids during Mode 3 if a loss-of-coolant event occurred. Since the SDC system discharges into the LPCI discharge piping it could potentially cause a water hammer in the piping if the hot water flashed to steam during the switchover from SDC to LPCI. The licensee identified this concern during the FASA based on a review of industry operating experience and was tracking the evaluation in the CAP per IR 1312222.
 - (b) The inspectors assessed whether the licensee's void acceptance criteria was consistent with NRR's void acceptance criteria. If NRR's acceptance criterion was not met, then the inspectors verified that the licensee had justified the deviations. The inspectors also confirmed that (1) the licensee addressed the effect of pressure changes during system startup and operation since such changes could significantly affect the void fraction from the initial value; and (2) the range of flow conditions evaluated by the licensee was consistent with the full range of design basis and expected flow rates for various break sizes and locations.

- (c) The inspectors reviewed selected documents, including calculations, engineering evaluations, and vendor technical manuals, with respect to gas accumulation in the subject systems. Specifically, the inspectors verified these documents addressed venting requirements, keep-full systems, void control during system realignments, and the effect of debris on strainers in the torus causing accumulation of gas under the upper elevation of strainers and the impact on net positive suction head requirements.

The licensee identified a void in the discharge flow path of the Unit 2 HPCI system caused by seat leakage through motor operated valve (MOV) 2-2301-8 and its associated check valve 2-2301-7, which was identified during testing in November 2011. The leakage was documented and analyzed in IR 01287893 and IR 01311205. The licensee could not measure the void size by UT due to radiological conditions in the area. The licensee initiated an Adverse Conditioning Monitoring Program (ACMP) 1287893-02, as an alternate method, to assess the size of the void at power until the next available work window that would allow valve rework to address the leak-by issues. The inspectors reviewed the ACMP for Unit 2 and the associated RELAP5 model generated to assess the licensee's ability to determine the void size based on piping temperatures. The RELAP5 model was based on a separate independent model that had been generated using actual plant data gathered during a previous water hammer event in 2001, where representative pressures and loads seen during the event were determined. Therefore, the inspectors concluded that, absent actual void measurement, the model produced a reasonable estimation of void size in the discharge line of the HPCI system based on valve leakage and pipe temperatures. Using the current leakage rate, pipe temperatures and pressures, and constant environmental conditions, the licensee determined that the maximum void size would not result in a transient that would exceed design piping loads. The licensee determined that a similar void may exist in the Unit 3 HPCI discharge piping due to similar piping configuration and recent operating experience, where a small amount of gas was vented from the high point as documented in IR 01314936. The licensee initiated ACMP 1314936-06 similar to Unit 2 utilizing RELAP5 results for Unit 3 HPCI discharge injection piping upstream of MOV 3-2301-8. The licensee's actions to monitor and/or minimize the void size, which was recently revised in January 2012, included establishing a sufficient length of venting time, trending vent times, temperature/pressure monitoring, and increasing the venting frequency, to ensure the voids were below the maximum void size assumed in the RELAP5 model until additional corrective actions can be taken to resolve the leakage issue. The inspectors, in consultation with NRC Headquarters staff, concluded the licensee's approach provided reasonable assurance the void volumes would remain acceptable from an operability standpoint. The licensee continued to explore additional methods to monitor these susceptible void locations while at power.

- (d) The inspectors conducted a walkdown of selected regions of HPCI and core spray in sufficient detail to assess the licensee's walkdowns. 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. The inspectors also assessed if the P&IDs accurately described the subject systems and were up-to-date with respect to recent hardware changes. In addition, the inspectors assessed if the licensee had isometric drawings that

describe the configurations of the GL 2008-01 scoped systems and had confirmed the accuracy of the drawings.

- (e) The licensee indicated the isometric drawings were not maintained up-to-date; therefore, were not relied upon for the gas management program. The licensee stated the current, as built configurations are documented in the P&IDs and inservice inspection (ISI) drawings. While reviewing the modification documents for installing the core spray vent lines, the inspectors identified the installation process did not require the ISI drawings to be updated. The inspectors noted the drawings had been updated after the licensee completed another modification – the installation of additional vent path piping. However, the inspectors noted the licensee did not capture this discrepancy in the corrective action program. The licensee initiated IR 1324322 to address the concern with not updating the drawings when vent valves were initially installed and for not following the CAP process.

The inspectors also conducted a similar walkdown of the normally inaccessible portions of the core spray and HPCI systems in earlier inspection periods. These additional activities counted towards the completion of this TI and were documented in IR 05000237/2009005; 05000249/2009005 and IR 05000237/2010002; 05000249/2010002.

- (f) The inspectors verified that licensee’s walkdowns have been completed. In addition, the inspectors selectively verified that information obtained during the licensee’s walkdowns were addressed in procedures, the CAP, and training documents.

During the FASA, the licensee identified the engineering groups had not received training on GL 2008-01, which was documented in IR 1315483. The inspectors noted that in their October 29, 2009, response to a Request for Additional Information, the licensee had indicated that training modules were being developed for engineering, maintenance, and operation personnel and the modules would be evaluated for implementation at the station. Although no commitment was made to implement the training, the licensee had not established any tracking mechanism to conduct this evaluation stated in their response to the NRC. The inspectors further identified the mechanical maintenance and operations personnel also did not receive the training on GL 2008-01. The licensee initiated IR 324819 to address this issue.

- (3) Testing: The inspectors reviewed selected surveillance, post-modification test, and post-maintenance test procedures and results to assess if the licensee approved and was using procedures that were adequate to address the issue of gas accumulation and/or intrusion in the subject systems. Specifically:

- (a) The inspectors reviewed procedures used for conducting void periodic monitoring and determination of void volumes to ensure the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance.

Inspectors noted the licensee revised procedure ER-DR-200-101, “Periodic Monitoring for Gas Accumulation in ECCS Systems,” on July 29, 2010, to clarify

the evaluation equation used to determine void volumes in both sloped and horizontal piping. The inspectors identified that although the licensee had identified and corrected the equation, no review was performed to evaluate whether void sizes determined using the previous methodology were still bounded by the licensee's acceptance criteria. The licensee initiated IR 1317850, IR 1318782, IR 1325027 to address historical voids and verified as-left voids were still bounded by the void acceptance criteria.

(b) The inspectors reviewed selected procedures used for void control, such as filling and venting, following conditions which may have introduced voids into the subject systems, to verify that the procedures addressed testing for such voids and provided processes for their reduction or elimination.

(4) Corrective Actions: The inspectors reviewed selected licensee's assessment reports and CAP documents to assess the effectiveness of the licensee's CAP when addressing the issues associated with GL 2008-01. In addition, the inspectors verified that selected corrective actions identified in the licensee's 9-month and supplemental reports were documented. The inspectors also verified that commitments were included in the CAP.

Based on this review, the inspectors concluded that there is reasonable assurance that the licensee will complete all outstanding items and incorporate this information into the design basis and operational practices. Therefore, this TI is considered closed

c. Findings

No findings of significance were identified.

.2 Temporary Instruction 2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks"

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, NEI 09-14, "Guideline for the Management of Buried Piping Integrity," (ADAMS Accession No. ML1030901420), to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components, which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI-2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks," to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe, underground piping and tanks in accordance with TI-2515/182 to determine if the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14 Revision 1 were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes with completion dates that had passed, the

inspectors reviewed records to determine if the attribute was in fact complete and to determine if the attribute was accomplished in a manner which reflected good or poor practices in program management.

Based upon the scope of the review described above, Phase I of TI-2515/182 was completed.

b. Observations

The licensee's buried piping and underground piping and tanks program was inspected in accordance with Paragraphs 03.01.a through 03.01.c of TI-2515/182 and was found to meet all applicable aspects of NEI 09-14 Revision 1, as set forth in Table 1 of the TI.

c. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 19, 2012, the inspectors presented the inspection results to Mr. D. Czufin, 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. Proprietary material received during the inspection was returned to the licensee.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- The review of the "Industry Initiative to Control Degradation of Underground Piping and Tanks" (TI -2515/182) with Site Vice President, Mr. D. Czufin, and other members of the licensee staff on January 19, 2012.
- The inspection results for the areas of in-plant airborne radioactivity control and mitigation; occupational dose assessment; and RCS specific activity performance indicator verification with Mr. D. Czufin, Site Vice President, on January 27, 2012.
- Public radiation safety for the radioactive solid waste processing and radioactive material handling, storage, and transportation program with Mr. D. Czufin, Site Vice President on January 27, 2012.
- The results of the Emergency Preparedness program inspection were discussed with Mr. D. Czufin on February 03, 2012.
- On February 10, 2012, the inspectors presented the "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)" (TI-2515/177) inspection results to Mr. S. Marik, and other members of the licensee staff.

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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Czufin, Site Vice President
S. Marik, Station Plant Manager
D. Anthony, NDES Manager
J. Biegelson, Engineering
H. Bush, Radiation Protection Manager
J. Cady, Radiation Protection Manager
P. Chambers, Dresden Licensed Operator Requalification Training Lead
P. DiSalvo, GL 89-13 Program Owner
H. Do, Corporate ISI Manager
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Nuclear Regulatory Commission

S. West, Director, Division of Reactor Projects

J. Cameron, Chief, Division of Reactor Projects, Branch 6

IEMA

R. Schulz, Illinois Emergency Management Agency

R. Zuffa, Illinois Emergency Management Agency

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000237/2012002-01 05000249/2012002-01	URI	Failure to Report an Unanalyzed Condition that Could Significantly Degrade Plant Safety (1R15)
05000237/2012002-02 05000249/2012002-02	NCV	Failure to Ensure the Effectiveness of Packages as required by DOT Regulations (Section 2RS8)
05000237/2012002-03 05000249/2012002-03	NCV	Failure to Ensure Packages Containing Solid Waste Contain as Little Free Standing and Noncorrosive Liquid as Reasonably Achievable (2RS8)
05000237/2012002-04; 05000249/2012002-04	NCV	Inadequate Basis in 10 CFR 50.59 Evaluation for Installation of Hypochlorite System (4OA3.2)
05000237/2012002-05; 05000249/2012002-05	FIN	Failure to Document a 10 CFR 50.59 Evaluation for Changes Made to the Facility (4OA3.2)
05000237/2012002-06; 05000249/2012002-06	FIN	Unit 2 Control Rod Drive Flow Control Valve Failed Closed Due to Inadequate Work Order Instructions (4OA3.3)
05000237/2012002-07; 05000249/2012002-07	NCV	Inadequate Work instruction Leads to Failure of Secondary Containment Interlock (4OA3.4)
05000237/2012002-08	NCV	Failure to Make a Required 8 Hour Event Report Per 10 CFR 50.72(b)(3)(v)(D) (4OA3.5)
05000237/2012002-09	FIN	APRMs 4, 5, and 6, Not Within The TS limits Prescribed In TS 3.3.1.1 Table 3.3.3.3-1, 2.b and c (4OA3.5)

Closed

05000237/2012002-02 05000249/2012002-02	NCV	Failure to Ensure the Effectiveness of Packages as required by DOT Regulations (Section 2RS8)
05000237/2012002-03 05000249/2012002-03	NCV	Failure to Ensure Packages Containing Solid Waste Contain as Little Free Standing and Noncorrosive Liquid as Reasonably Achievable (2RS8)
05000237/2011002-01; 05000249/2011002-01	URI	Satisfactory Performance of a Surveillance Test Procedure That Was Later Demonstrated to be Not Capable of Being Performed (4OA3.1)
05000237/2011004-05; 05000249/2011004-05	URI	Alert Declared Due to Chemical Spill (4OA3.2)
05000237/2012002-04; 05000249/2012002-04	NCV	Inadequate Basis in 10 CFR 50.59 Evaluation for Installation of Hypochlorite System (4OA3.2)
05000237/2012002-05; 05000249/2012002-05	FIN	Failure to Document a 10 CFR 50.59 Evaluation for Changes Made to the Facility (4OA3.2)
05000237/2012002-06; 05000249/2012002-06	FIN	Unit 2 Control Rod Drive Flow Control Valve Failed Closed Due to Inadequate Work Order Instructions (4OA3.3)
05000237/2012002-07; 05000249/2012002-07	NCV	Inadequate Work instruction Leads to Failure of Secondary Containment Interlock (4OA3.4)
05000237/2012002-08	NCV	Failure to Make a Required 8 Hour Event Report Per 10 CFR 50.72(b)(3)(v)(D) (4OA3.5)
05000237/2012002-09	FIN	APRMs 4, 5, and 6, Not Within The TS limits Prescribed In TS 3.3.1.1 Table 3.3.3.3-1, 2.b and c (4OA3.5)
05000237/2011-004-00; 05000249/2011-004-00	LER	Personnel Error Results in Control Room Emergency Ventilation Air Conditioning System Inoperability (4OA3.6)
NRC Temporary	TI	Managing Gas Accumulation in Emergency Core Cooling,

Instruction 2515/177

Decay Heat Removal, and Containment Spray Systems
(NRC GL 2008-01) (4OA5.1)

Discussed

05000237/2012010-01
05000249/2012010-01
05000237/2011005-01

NCV

Failure of the 125 Vdc Generator Rectifier Set (1R22)

NCV

Bus 23 Pot Fuse Drawer Resulting in the Inoperability of
the Control Room Emergency Ventilation Air Conditioning
System (Section 4OA3.6)

NRC Temporary
Instruction 2515/182

TI

Review of the Industry Initiative to Control Degradation of
Underground Piping and Tanks (4OA5.2)

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment (71111.04Q)

- M-27, "Diagram of Core Spray Piping," Revision MN
- DOP 1400—M1/E1, "Unit 3 Core Spray System," Revision 21
- M-358, Diagram of Core Spray Piping, Revision CL

1R04 Equipment Alignment (71111.04S)

- UFSAR 6.3, Emergency Core Cooling Systems
- DOP 1400-M1, "Unit 2 Core Spray System," Revision 23
- DOP 1400-E1, "Core Spray Electrical," Revision 03
- DOP 1400-01, "Core Spray System Preparation for Standby Operation," Revision 13
- WO 99020584, D2 10Y TS IST CS RV – RPLC/TEST – GRP C"
- IR 1325027, "GL08-01 Insp-Re-Evaluation Results for Past Voids Core Spray"
- IR 1218189, "DTP 09: Packing Leak on Core Spray Injection Valve"
- IR 1225296, "Ineffective Troubleshooting Plan for Valve 2-1402-4A Timing"
- IR 1238510, "Follow-Up Action to CMO to Review Valve Timing Test Results"
- IR 1252509, "2A CS PP MTR Lower Oil Reservoir Sample/Drain Plug Leaking"
- IR 1278254, "2A Core Spray Pump Motor Heater Conduit is Broken"
- IR 1280112, "Unsatisfactory CS Pump Control Switch PMT"
- IR 1281485, "2A Core Spray Pump Ran Through Min Flow > 10 Minutes"

1R05 Fire Protection (71111.05)

- Pre-Fire Plan - Fire Zone 8.2.1A, "Unit 2 Condensate Pumps Elev. 469'," Revision 2
- CC-AA-211, "Fire Protection Program," Rev 4
- Pre-Fire Plan – Fire Zone 9.0A, Unit 2 Diesel Generator Elev. 517'," Revision 3
- Pre-Fire Plan – Fire Zone 6.1, "Unit 3 250V Battery Charger Room Elev. 538'," Revision 2
- Pre-Fire Plan - FZ 11.1.3, "Unit 3 HPCI Pump Room Elev. 476'," Revision 2

1R06 Flooding (71111.06)

- WO 1306112, "D2 2Y PM Door BRGS Watertight COND Hotwell Fittings"
- WO 854082, "D2 6Y PM Adjust COND HW Watertight Door/REPL Seals"
- DMS 3300-01, "Condenser Hotwell Water Tight Door Surveillance and Maintenance," Revision 02

1R11 Licensed Operator Requalification Program (71111.11)

- Simulator Scenario Guide OPEX-AW-P1, Revision 4
- TQ-AA-150-F08, "Simulator Evaluation Form – Individual," Revision 3
- TQ-AA-150-F09, "Simulator Evaluation Form – Crew," Revision 3
- TQ-AA-150-F06, "Simulator Evaluation Form – Shift Manager," Revision 2

1R12 Maintenance Effectiveness (71111.12)

- IR 1263572, "2/3 RBCCW Will Not Develop Discharge Pressure"
- IR 1261045, "Low Amps and Cavitation on 2/3 RBCCW Cooling Water Pump"
- IR 1259488, "2/3 RBCCW PP Response Not as Expected"
- IR 1298626, "Issues Aligning 2/3 and 3B RBCCW Pumps"
- IR 1165830, "3A RBCCW Pump High Vibes"
- IR 1140808, "3B RBCCW Inadvertantly Secured"
- ASME OM Code Equip in Double Frequency, 3C CCSW Pump, Dated 2/16/2012
- Plant IQ, Current Equipment Assessment Detail Report, CCSW Pump 3C, Dated 2/24/2012
- Performance Evaluation Report Z15 LPCI/CCSW, January 1, 2010 – December 31, 2011
- Scoping/Risk Significance Detailed Report, Z15-1 CCSW, Revision 1/4/04
- IR 1192663, "3C CCSW Pump in the Alert Range for Vibration"
- WR 362667, "3C CCSW Pump in the Alert Range for Vibration"
- IR 1291381, "Overhaul of 3C CCSW Pump Recommended"
- WR 385518, "Overhaul of 3C CCSW Pump Recommended"
- IR 1116382, "Unit 3 C CCSW Pump Axial Direction Vibrations Increasing"
- IR 0072259, "2A CCSW Pump Declared Inoperable Due to High Vibrations"
- IR 124639, "PM Identifies 3A CCSW Pump Vibration Trend Towards IST Alert"
- IR 136829, "3A CCSW Pump Vibration in the Alert Range"
- IR 164034, "3A CCSW Vibration Levels"
- IR 314046, "3A CCSW Pump Vibration in the Alert Range"
- IR 532118, "2C 3H Vibration Level Adverse Trend"
- IR 543789, "2D CCSW Pump Vibration Levels Rising at Point 3H"
- IR 750621, "Change in 2C CCSW Pump Vibration Data"
- IR 999302, "2C CCSW IST Pump High Vibes (Alert Range in DISACM)"
- IR 1184652, "U3 CCSW Vault Door Failed LLRT. B&C CCSW Pumps Inop"
- IR 1217178, "Bay 13 Isolated due to Both Sets of Stop Logs Installed"
- IR 139888, "New Rotating Assembly for CCSW Assembled Incorrectly"
- IR 72259 - Apparent Cause Evaluation – 2A CCSW Pump Inoperable, dated 9/13/01
- IR 73081-03 – Common Cause Evaluation – Recurring Events of Foreign Material Entry into CCSW Pumps (1985-2001), dated 9/20/01

1R15 Operability Evaluations (71111.15)

- IR 1281716, "U2 Bypass Valve Accumulator Low Press"
- IR 1321465, "Inspection/Replacement of Unit 3 EHC BPVS Accum Check Valve"
- IR 1311144, "NOC ID: No Doc To ID Potential Operating Beyond Design Basis"
- IR 1311205, "Unit 2 HPCI MOV 2301-08 Leakage Analysis"
- WO 1495632, "Replace Transfer Relay 3-7838-7-CR3871"
- IR 1311662, "Relief Valve Capacity"
- Event # 47539, "Part 21 – Capacity Failure of Pressure Relief Valve"
- Calculation DR-352-M-001, "NCAD Bypass Lines Orifice Sizing,"
- ABB Calculation 0591-479-001, "Dresden/Quad Cities Backup Nitrogen Flow Rate,"
Revision 000
- UFSAR Section 6.2.5.3.3, "Nitrogen Containment Atmosphere Dilution (NCAD) System"
- P&ID M-25, Diagram of Pressure Suppression Piping, Rev. DU

1R18 Plant Modifications (71111.18)

- WO 1175312, "Issues Associated with Freon Diluted Oil in CREVS RCU"
- IR 1320909, "CREVS LCO Delayed Two Days Due to Parts Issues"
- IR 1321348, "Work Package Revision at Execution"
- IR 1323299, "CREVS RCU Fails Vacuum Testing After Piping Mod"
- IR 1326114, "CREVS RCU Seal Leak"
- IR 1326773, "AWA Not Issued for Mod Change"
- IR 1326965, "2/3 CREVS System Has Low Superheat – EPN 2/3-9400-102"
- IR 1326795, "2/3B CREVS RCU Tripped on Compressor Discharge Press High"
- IR 1327062, "NOS ID: Maintenance Not Recognizing When OOPS"
- IR 1334063, "CREVS 057B1 Fragnet Critique"
- M-3136, "Piping Arrangement Refrigeration Tubing Control Room HVAC Upgrade," Revision 2
- M-3121, "Piping & Instrument Diagram Control Room HVAC," Revision 30
- M-3124, "Control Room HVAC Equipment Rooms Plans and Sections El. 534'-0" & El. 549'-0"," Revision E
- M-3128, "Piping Arrangement Control Room HVAC Area El. 534'-0" & El. 549'-0"," Revision 8
- M-3130, "Piping Arrangement Sections and Details," Revision 6
- M-3133, "Pipe Support Detail Support No. PS-06," Revision 2
- 12E-6811F, "Instrument Loop Diagram Control Room HVAC Equipment Loops 062, 034, 046," Revision 5
- EC 372521, "U2/3 Control Room HVAC System Train B CREVS RCU – Correction of Issues Associated with Freon Diluted Oil," Revision 3
- EC 372521, "U2/3 Control Room HVAC System Train B CREVS RCU – Correction of Issues Associated with Freon Diluted Oil," Revision 4
- DOS 5750-04, "Control Room Train B HVAC and Air Filtration Unit Surveillance," Revision 47
- DOP 5750-05, "Control Room Ventilation and Air Conditioning System," Revision 61
- NSWP-M-04, Pipe Support Installation and Inspection, Revision 2

1R19 Post-Maintenance Testing (71111.19)

- DOS 0500-03, "APRM Rod Block And Scram Functional Test," Revision 58 performed January 1, 2012
- WO 1502188-03, "Adjust Moving contact Fingers on HFA Relays, Unit 2 RPS Channel A2"
- WO 1509525, "U3 EDG Unexpected Shutdown During Maint. Run"
- IR 1318884, "U3 EDG Unexpected Shutdown During Maint. Run"
- IR 1317551, "During PM Found TDR 5 Cycle Time Over Acceptable Range"
- IR 1317465, "Conduit on 3 EDG Exhaust Manifold Thermocouple Needs Repair"
- IR 1317080, "Very Small Oil Leak on EDG Governor Tubing"
- IR 1318692, "During Functional Test of D/G Protective Devices Low Oil Tem"
- IR 1318721, "Air Leak on U3 EDG Air Start Relay Valve"
- IR 1318225, "U3 EDG Fuel Oil Transfer Pump Seal Leak"
- IR 1318243, "Procedure Issue Causes Delay for U3 EDG Work"
- IR 1317711, "Pipe Broken to U3 EDG CWP"
- WO 1107539-02, "CMO-PMT-Vibration Analysis of 2B CRD Pump After Overhaul"
- WO 1107539-03, "OP-PMT-Check For Leaks @ System Pressure on 2B CRD Pump"
- WO 1107539-04, "OP-PMT-Perform Functional Test of 2B CRD Pump After Overhaul"
- WO 01412443, "D2 AN COM Replace Air Start Regulating Valve on EDG"
- WO 01412487, "D2 AN PM Sample and Change Oil 2B D/G Starting Air Compressor"
- WO 01412489, "D2 AN PM Sample and Change Oil 2A D/G Starting Air Compressor"
- WO 01500696, "Replace MOC Switch Rubber Bumper Stop at Bus 24-1 Cub 2"

- WO 01483206, "Install Instrumentation to Monitor U2 EDG Cooling"
- DOS 6600-02, "Diesel Generator Mechanical Inspection and Preventative Maintenance," Revision 34
- DOP 6600-02, "Diesel Generator 2(3) Startup," Revision 31
- DOP 6600-01, "Diesel Generator 2(3) Preparation for Standby Operation," Revision 26
- DOS 6600-01, "Diesel Generator Surveillance Tests," Revision 119
- IR 1328071, D2 Diesel Air Start Regulator Failure
- IR 1328204, MMD Delayed on U2 EDG LCO
- IR 1328419, Air Leaks on Piping on the Air Start System for the 2EDG
- IR 13228462, Studs Broken off on 2 EDG Air Intake Filter Housing Covers
- IR 1326994, NOS ID Work Package Vulnerability
- IR 1326502, Inconsistent Information in DOS 6600-01
- WO 748391, "D2 8Y PM Disassemble and Inspect Chk Vlv 2-1301-26"
- WO 673550, "D2 8Y PM Disassemble and Inspect Chk Vlv 2-1407-501"
- ER-AA-400-1001, "Check Valve Monitoring and Preventative/Predictive Maintenance Program," Revision 9
- M-35, "Diagram of Demineralized Water System Piping," Revision DY
- M-23, "Diagram of Fire Protection Piping," Revision M
- EC 387670, "Re-Wire Bus (23-1/24-1) Loss of Offsite Power Alarm," Revision 000
- 12E-2650A, "Elevation Diagram 4KV Bus 23-1 & 24-1 2nd Lev UV PNLs 2252-83 & 84," Revision C
- 12E-2650B, "Wiring Diagram 4KV Bus 23-1 2nd Level Undervoltage PNL. 2252-83," Revision G
- 12E-2650C, "Wiring Diagram 4KV Bus 24-1 2nd Level Undervoltage PNL. 2252-84," Revision G
- 12E-2575BQ, "Schematic Diagram Control Room Annunciator Panel 902-8 Part 5 of 6," Revision J
- 12E-2575BR, "Schematic Diagram Control Room Annunciator Panel 902-8 Part 6 of 6," Revision P
- IR 1322703, "Potential Design Vulnerability in Single Open Phase Detection"
- IR 1326135, "Potential Vulnerability SWYD Single Open Phase Detection"

1R22 Surveillance Testing (71111.22)

- Appendix A, "Unit Daily Surveillance Log, Attachment A, Eight Hour Shifts," Revision 128
- WO 1475091-01, D3 QTR TS ADS Permissive LPCI and CS PMP Disch Press SW CAL
- IR 1307725, "Galled Test Tap Fitting on PS 2-1554A, No Tech Spec"
- IR 1309541, "NRC Question On Dresden Procedure DIS 0287-01, Rev 15"
- TSG-3, Attachment I, "Connecting Temporary Power To U2 ERVs [electromatic relief valve] for ERV Manual Operation," Revision 6
- IR 1156634, "Portable B5b Generator/Charger Tripped AC Input Breaker."
- WO 1170848, "D2/3 2Y Com B5B Portable Generator/Charger Load Test" dated 12/28/2010

1EP2 Alert and Notification System Testing (71114.02)

- FEMA ANS Design Basis Report; November 2009
- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revision 20
- Dresden Off-Site Siren Test Plan; December 2006
- Dresden Siren Testing and Maintenance Data; January 2010 through January 2012
- Exelon Semi-Annual Siren Report; January 1, 2010 to June 30, 2010
- Exelon Semi-Annual Siren Report; June 30, 2010 to December 31, 2010

- Exelon Semi-Annual Siren Report; January 1, 2011 to June 30, 2011
- Exelon Semi-Annual Siren Report; June 30, 2011 to December 31, 2011
- 2011/2012 Emergency Planning for the Dresden Area Mailer

1EP3 Emergency Response Organization Augmentation (71114.03)

- Dresden Emergency Response Organization Duty List; December 20, 2011
- EP-AA-112-100-F-06; Midwest ERO Notification or Augmentation; Revision 0
- TQ-AA-113; ERO Training and Qualification; Revision 18
- Emergency Response Organization (ERO) Augmentation Call-In Drill Results; EOF Staffing Detail; January 2010 through January 2012
- Selected Station Emergency Response Personnel Training Records

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

- LS-AA-125; Corrective Action Program (CAP) Procedure; Revision 16
- NO-AA-210; Nuclear Oversight Regulatory Audit Procedure; Revision 2
- NO-AA-220; Nuclear Oversight Performance Assessment Procedure; Revision 4
- LS-AA-126; Self-Assessment and Benchmark (SAB) Program; Revision 7
- Emergency Preparedness Audit Report NOSA-DRE-10-03 (IR 996576) Dresden Station
- Emergency Preparedness Audit Report NOSA-DRE-11-03 (IR 1144147) Dresden Station
- Emergency Preparedness Audit Report NOSA-DRE-10-03 (IR 1015346) Nuclear Corporate Support
- Emergency Preparedness Audit Report NOSA-DRE-11-03 (IR 1150323) Nuclear Corporate Support
- Dresden Emergency Preparedness Performance Report NOSCPA-DR-11-06
- Dresden Emergency Preparedness Performance Report NOSCPA-DR-11-16
- 2010 NRC EP Exercise Inspection Readiness Assessment 1147877
- Dresden Station 2012 NRC Baseline Program Inspection Readiness Assessment 1286206-03
- Dresden 2010 Off-Year Exercise Evaluation Report
- Dresden First Quarter 2011 Focused Area Drill Evaluation Report
- Dresden 2011 NRC Graded Exercise Evaluation Report
- Dresden Station Alert Event Report from July 15, 2011
- CAP Entry 1021835, Loss of MET Tower Data Source
- CAP Entry 01061158, On Duty ERO Did Not Respond During Call In Drill
- CAP Entry 01072761, TSC HVAC Surveillances Failed
- CAP Entry 01129034, HPN Line Not Functioning
- CAP Entry 01206461, NARS Inoperable
- CAP Entry 01225404, Loss of ERDS Communication
- CAP Entry 01261403, DEP Documentation Error
- CAP Entry 01273762, Information on EP Alert Classification
- CAP Entry 01282950, Vertical Acceleration Criteria Missing from Seismic EALs
- CAP Entry 01291135, ERF Relocation Issues
- CAP Entry 01320551, EP-AA-1000, Exelon Standard E-Plan ANS Testing Not in Alignment with Approved FEMA ANS Report

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

- RP-DR-900; Continuous Air Monitor (CAM) Calibration Record Data Sheet; Revision 9; CAM No. 46; October 4, 2011
- RP-DR-900; CAM Calibration Record Data Sheet; Revision 9; CAM No. 47; December 5, 2011

- RP-DR-900; CAM Calibration Record Data Sheet; Revision 9; CAM No. 50; February 7, 2011
- RP-DR-900; CAM Calibration Record Data Sheet; Revision 9; CAM No.51; February 8, 2011
- RP-DR-900; CAM Calibration Record Data Sheet; Revision 9; CAM No. 48; February 14, 2011
- RP-DR-901; Continuous Air Monitor Log Sheet; dated from December 30, 2011 through January 7, 2012
- PSI (Professional Service Industries, Inc.); Quarterly Service Air and Self Contained Breathing Apparatus – Meeting Grade D Air Specification; between January 18 and November 2, 2011
- RP-AA-443; Quantitative Respirator Fit Testing; Revision 9
- RO-AA-443; Quantitative Respirator Fit Testing; Revision 9; Attachment 8; Corrective Lens Verification Form
- RP-AA-825; Maintenance, Care and Inspection of Respiratory Protective Equipment; Revision 4
- LS-AA-126-1001; Self Assessment Summary; FASA; January 10, 2012
- IR 01225271; SCBA Compressor Not Receiving Power; June 11, 2011
- IR 01224796; D3R21 RP Air Sampling Shortfalls; June 4, 2011
- IR 01229061; Unit-3 Drywell Monitor Power Supply Drifts; June 15, 2011
- IR 01296089; Recorder RR-2-2420A (2A Drywell Radiation Monitor) Setup Change Request; November 30, 2011
- IR-01306275; Unit-2 Drywell CAM Reading Increasing; December 12, 2011
- IR-01298458; Unit-3 Drywell CAM Flow Control Display Reading High; December 6, 2011
- DTS-7500-11; DOP Testing of Unit-2/3 SBTG HEPA Filters; September 21, 2011
- DTS-7500-07; Standby Gas Treatment System Air Filter Unit Performance Requirements Methyl Iodide Removal and Charcoal Leak Test Removal Efficiency; September 9, 2011

2RS4 Occupational Dose Assessment (71124.04)

- RP-AA-230; Operation of Canberra Fastscan Wholebody Counter; Revision 0
- RP-AA-211; Personnel Dosimetry Performance Verification; Revision 9
- US Department of Commerce; National Institute of Standards and Technology; NVLAP; Certificate of Accreditation to ISO 17025:2005; Marion Technologies (GDS), Inc.; dated from July 1, 2011 through June 30 2012
- US Department of Commerce; National Institute of Standards and Technology; NVLAP; Certificate of Accreditation to ISO 17025:2005; Landauer, Inc.; dated from January 1, 2012 through December 31, 2012
- RP-AA-270; Declaration of Pregnancy; Revision 6
- RP-AA-220; Bioassay Program; Revision 8
- RP-AA-220-1001; Collection and Handling of In-Vitro Bioassay Samples; Revision 0
- RP-AA-222; Methods for Estimating Internal Exposure from In-Vivo and In-Vitro Bioassay Data; Revision 3
- 2011 Quarterly Data Results of TLD Irradiation by Battelle Labs
- RP-AA-203-1001; Personnel Exposure Investigations; Revision 6
- RP-AA-2003-1002; response to Electronic Dosimeter (EPD) Reset Alarms REMS Error Message No. 795; Revision 1 and Attachments
- Data of Final TLD/ED Exposure Results for Period September through November 2011
- Dresden TLD/ED Comparison Test; December 1, 2011
- Action Tracked Item No. 1292962; Common Cause Analysis; Dresden Unit-2 Refueling Outage 22 Contamination Study; December 19, 2011
- Action Tracked Item No. 1292962; Common Cause Analysis; Dresden Unit-2 Refueling Outage 22 Exceed Outage Exposure Goal; November 12, 2011
- IR 01309830; Dropped Electronic Dosimeter Results in ED Malfunction; January 5, 2012

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

- IR-01291418; Turbine Retro Fit Lower Casing Shipments Issues; November 16, 2011
- IR-201228709; Quad Cities Notification of Container Issue at Clive, Utah; June 6, 2011
- Dresden Unit-2 Waste Disposition Plan; Energy Solutions; Revision 3
- LS-AA-125-1003; Apparent Cause Report; Dresden Unit-2 Turbine Retro-Fit Lower Casing Shipment Package Issues; Condition Report No. 01291418-02; MRC Approved on January 12, 2012
- Generator Site Access Permit Enforcement Policy; Division of Radiation Control Utah Department of Environmental Quality; February 1, 2011
- Generator Site Access Number 0110 000 029, Notice of Violation; November 25, 2011
- DW-11-055; Form 540, Uniform Low-Level Radioactive Waste Manifest Shipping Paper; November 11, 2011
- DW-11-054; Form 540, Uniform Low-Level Radioactive Waste Manifest Shipping Paper; November 11, 2011
- DW-11-053; Form 540, Uniform Low-Level Radioactive Waste Manifest Shipping Paper; November 11, 2011
- RP-AA-602-1001; Packaging of Radioactive Material Waste Shipments; Revision 12
- RP-AA-603; Inspection and Loading of Radioactive Material Shipments; Revision 6

4OA1 Performance Indicator Verification (71151)

- NEI 99-02, "Regulatory Assessment Performance Indicator Guidance", Revision 6
- Exelon Nuclear performance Summary: Dresden - P.2: Power History Curves, Unit 2/3, Rev. 1
- Operations Log Entries Jan-Dec 2011
- Dresden Nuclear Power Station, Units 2 and 3 Integrated Inspection Reports 2011-002, 2011-003, 2011-004, and 2011-005
- PI Trend, Dresden Unit 2 and Unit 3, 1Q 2011 – 4Q 2011
- EP-AA-125-1001; EP Performance Indicator Guidance; Revision 6
- EP-AA-125-1002; ERO Performance - Performance Indicators Guidance; Revision 7
- EP-AA-125-1003; ERO Readiness - Performance Indicators Guidance; Revision 7
- EP-AA-125-1004; Emergency Response Facilities & Equipment Performance Indicators Guidance; Revision 5
- EP-MW-114; Notifications; Revision 10
- EP-AA-111; Emergency Classification and Protective Action Recommendations; Revision 16
- EP-AA-111-F-04; Dresden Plant Based PAR Flowchart; Revision D
- EP-MW-114-100; Midwest Region Offsite Notifications; Revision 11
- EP-AA-122; Drills & Exercises; Revision 12
- EP-AA-112-200-F-01; Station Emergency Director Checklist; Revision F
- DEP Opportunities; October 1, January 2011 - December 2011
- ERO Personnel Participation; January 2011 - December 2011
- Siren System Availability Test Records; January 2011 - December 2011
- LS-AA-2090; Monthly Data Elements for NRC Reactor Coolant System (RCS) Specific Activity for Dresden Unit 2 and 3; Revision 4: January 2011 through December 2011

4OA2 Identification and Resolution of Problems (71152)

- IR 1347773, "Need Scaffold Removal Task"
- IR1346496, "NRC ID: Teletower in U2 SBO Diesel Room Touching Piping"
- IR 1338193, "Shaw Scaffold Beyond 90 Days Without a 50.59"

- IR 1339907, "Removal of Scaf. No. D-626 on Top of U2 Torus and Piping"
- IR 1337604, "Request Shaw to Share Scaftrax Software Program"
- IR 1336661, "Mod/50.59 FASA: Aggregate Review of FASA Deficiencies"
- IR 1335421, "Scaffold Not Documented When Removed"
- IR 1325249, "NOS Identified Shaw Scaffold with No 50.59"
- IR 1194750, "Temp Scaffold D-353 Not Removed within 90 Days"
- IR 1194753, "Temporary Scaffold D-355 Not Removed within 90 Days"
- IR 1302467, "NOS ID: Temp Scaffolding Over 90 Day Time Limit"
- MA-AA-716-025, "Scaffold Installation, Modification, and Removal Request Process,"
Revision 9

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

- IR 1280681, Received Unexpected Alarm DAN 923-5 C-1 Rx Bldg Dp Lo, dated 10/24/2011
- IR 1328879, "APRM AGAFS Out of Tolerance"
- IR 1341456, "NRC Questioning the Reportability of APRMS Gains Out of Tol."
- IR 1344970, "NRC Indicates the IR 1328879 is a Loss of Safety Function"
- IR 1302573, "NRC SRI Question on Chemical Tanks and CREVS"

4OA5 Other Activities

Temporary Instruction (TI 2515/177)

- "Exelon Guidance Document for Performing Walkdowns for the Evaluation of Gas Accumulation in Safety Related Systems," May 2008
- ACMP HPCI Discharge Piping Temperature Monitoring", Revision 4
- IR0803865, "Dresden Actions in Response to NRC GL 2008-01"
- IR0807043, "Air Identified in 2A Core Spray Discharge Line"
- IR0807780, "Air Identified in 2A Core Spray Discharge Line"
- IR0812059, "Core Spray Vent Piping Configuration"
- IR0817931, "Air Identified in 2A CS Discharge Line Hist Op Results"
- IR0924049, "Errors in Calculating the New Low-Low CST Levels in EC 374991"
- IR0929765, "Potential Vulnerability in ECCS Venting Procedures"
- IR0993244, "Reverse Slope Identified 2B Core Spray Line in DW"
- IR0999625, "Air Found In HPCI Discharge Piping During UT"
- IR0999762, "Air Found in Second Location in HPCI Discharge Piping"
- IR1057049, "Air Void U2 HPCI Discharge Piping Above Acceptance Criteria"
- IR1060104, "ER-DR-200-101 Requires Revision to Clarify Equation"
- IR1287893, "D2R22 IST Seat Leakage Test for 2-2301-8 Exceeded Limit"
- IR1311144, "NOS ID, "NO Doc to ID Potential Operating Beyond Design Basis"
- IR1311205, "Unit 2 HPCI MOV 2301-08 Leakage Analysis"
- IR1313314, "Enhancements Needed for DOS 2300-08"
- IR1313396, "Enhancements Recommended for DOS 1400-07"
- IR1314936, "Unit 3 Discharge Piping X-Area Venting"
- IR1315179, "Enhancements Recommended For DOS 7100-06 and 07"
- IR1037437, "Install a High Point Vent U3 ECCS Keepfill Pump Discharge Line"
- IR1058558, "Air Ribbon Discovered in 3B Core Spray Suction"
- IR1095384, "Gas Void Found in 2A Core Spray Suction Line"
- IR1243216, "ECCS High Point Vent Surveillances"
- IR1317850, "Historic Re-evaluation of ECCS Voiding, GL 08-01"
- IR1318071, "EOC Needed for Incorrectly Sloped HPCI Piping in D2R21"

- IR1318113, "ATI Closure Documentation Issue ID by NRC"
- IR1318782, "Historic Re-evaluation of CS Voiding"
- IR1324322, "IR Not Written Documenting Affected Drawings Not Updated"
- IR1324819, "Operator & Maintenance Training Not Evaluated"
- IR1325027, "Re-evaluation Results for past Voids Core Spray"
- CC-DR-405, "Maintenance Specification Installation of Fittings on Pipes for Vent and Drain Activities," Revision 2
- DOS 1400-03, "ECCS Fill System," Revision 55
- DOS 1400-04, "Core Spray Check Valves Inservice Test (IST) and Piping Flush," Revision 35
- DOS 1400-05, "Core Spray System Pump Operability and Quarterly IST Test with Torus Available," Revision 44
- DOS 1400-07, "ECCS Venting," Revision 29
- DOS 7100-07, "Seat Leakage Testing of Valves 2(3)-2301-8, 2(3)-2301-9, 2(3)-2301-10", Revision 7
- DOS1400-07, "ECCS Venting, Revision 29"
- DOS 2300-07, "High Pressure Coolant Fast Initiation Test", Revision 42
- DOS 2300-08, "HPCI Pump Discharge Line Temperature Monitoring", Revision 9
- ER-AA-2009, "Managing Gas Intrusion," Revision 1
- ER-DR-200-101, "Periodic Monitoring for Gas Accumulation," Revision 4
- DRE01-0076, "Analysis of HPCI Injection Piping Dynamic Loads", Revision 0
- DRE02-0007, "Acceptance Criteria for HPCI Discharge Piping Temperature Monitoring, Revision 0
- DRE98-0030, "Determination of Set Point of Low-Low Level Switches to Prevent Potential Air Entrainment from Vortexing during HPCI Operation", April 15, 2009
- EC370261, "System Scope for GL 2008-01 & SER 2-005 Gas Intrusion," April 7, 2008
- EC371151, "Core Spray & Keepfill System Evaluation
- EC371153, "NRC GL 2008-01 HPCI System Evaluation", Revision 3
- EC371270, "Qualify Small-Bore Vent Lines for CC-DR-405," Revision 0
- EC371641, "Relocate 2A Core Spray Vent Line from Side to Top of the Header," Revision 1
- EC371835, "Venting and Gas Accumulation for Core Spray Discharge Lines," Revision 0
- EC371911, "Acceptance Criteria for Venting of the LPCI and Core Spray System," Revision 0
- EC372084, "Historical Operability of Air Identified in 2A Core Spray Discharge Line Downstream of RO 2-1402-50A," Revision 0
- EC372400, "NRC GL 08-01 Venting and Gas Accumulation Evaluation for HPCI", Revision 1
- EC374991, "Evaluate HPCI System Function with 2-2301-6 Valve Failed to Close", Revision 1
- EC377592, "Froude Numbers for ECCS/SDC Test and Design Flow Rates," Revision 0
- EC379781, "Evaluation of Air Identified in U2 HPCI Discharge Line", Revision 2
- EC385008, "3B Core Spray Pump Discharge Piping Pressure Change," Revision 0
- EC386623 Evaluation of HPCI 2-2301-8 Seat Leakage Test Results", Revision 000
- EC387177, "Acceptance Criteria for HPCI Discharge Piping Due to Back Leakage at 2301-7 and 2301-8 Valves", Revision 0
- FASA, "GL 2008-01 Gas Management Program"
- ISI 104, "Inservice Inspection Class I Core Spray Piping," Revision H
- ISI-203, "In-service Inspection Class II High Pressure Coolant Injection Piping", Revision D
- ISI-510, "System Pressure Test Walkdown Isometric H.P. Coolant Injection Piping", Revision E
- ISI-510, "System Pressure Test Walkdown Isometric H.P. Coolant Injection Piping", Revision E
- M-27, "Core Spray Piping," Revision AAN
- M-51, "Diagram of High Pressure Coolant Injection Piping", Revision CN
- Operability Evaluation 11-002, "Drywell Temp used as Input for the Containment Analysis", Revision 2

- RS-08-050, "Three-Month Response to Generic Letter 2008-01, April 11, 2008
- RS-08-131, "Nine-Month Response to Generic Letter 2008-01, October 14, 2008
- RS-09-147, "Response to Request for Additional Information Regarding Generic Letter 2008 01, October 29, 2009
- WO 01011557, "D2 TS HPCI Pump Comprehensive Oper. Test and IST Surv."
- WO 01222259, "D2 TS HPCI Pump Comprehensive Oper. Test and IST Surv."
- WO 01290230, "Air Found In Second Location in HPCI Discharge Piping"
- WO 01317283, "D2 1MTS HPCI Disch. Piping Water Filled Verification"
- WO1155429, "Install 2A Discharge Pump Inlet and Outlet CS High Point Vents"
- WO1335755, "Replace U3 Jockey Pump Seal with Safety Related Seal"
- WO1490400, "CS Discharge Piping Water Filled Verification"
- WO1491726, "CS Discharge Piping Water Filled Verification"

Temporary Instruction (TI) 2515/182

- ER-AA-5400; Buried Piping and Raw Water Corrosion Program (BPRWCP) Guide; Revision 5
- ER-AA-5400-1002; Buried Piping Examination Guide; Revision 4
- ER-AA-5400-1003; Buried Pipe and Raw Water Corrosion Program (BPRWCP) Performance Indicators; Revision 4
- Report No. 0609-01; Dresden Buried Piping Risk Analysis; Revision 0, Attachment A
- NES-G-01; Dresden Station Buried Piping Inspection Plan; May 13, 2011 Revision A
- Dresden Station Asset Management Plan for Buried Piping
- LS-AA-126-1001; FASA Self Assessment; October 7, 2009
- NES-MS-15.2; Guidance for Determining Reasonable Assurance for Structural and/or Leakage Integrity for Buried Piping; Revision 0

LIST OF ACRONYMS USED

ACMP	Adverse Conditioning Monitoring Program
ADAMS	Agencywide Document Access Management System
APRM	Average Power Range Monitor
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCSW	Component Cooling Service Water
CFR	Code of Federal Regulations
CREV	Control Room Emergency Ventilation
CS	Containment Spray
DHR	Decay Heat Removal
DOT	Department of Transportation
DRP	Division of Reactor Projects
EACE	Equipment Apparent Cause Evaluation
EC	Engineering Change
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
FASA	Functional Area Self-Assessment
GL	Generic Letter
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation and Air Conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report / Issue Report
ISI	Inservice Inspection
IST	In-Service Testing
LER	Licensee Event Report
LPCI	Low Pressure Coolant Injection
MOV	Motor Operated Valve
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OOS	Out-Of-Service
PARS	Publicly Available Records System
PI	Performance Indicator
P&ID	Piping and Instrumentation Diagram
PM	Planned, Post or Preventative Maintenance
RBCCW	Reactor Building Closed Cooling Water
RCS	Reactor Coolant System
SDC	Shutdown Cooling
SDP	Significance Determination Process
SSC	Structure, System, and Component
TI	Temporary Instruction
TRM	Technical Requirements Manual
TS	Technical Specification
TSTF	Technical Specification Task Force Traveler

UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Testing
WO	Work Order

M. Pacilio

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Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

Docket Nos. 50-237 and 50-249
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SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 - NRC
INTEGRATED INSPECTION REPORT 05000237/2012002 and
05000249/2012002

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