



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

October 19, 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, INTEGRATED
INSPECTION REPORT 05000237/2012004, 05000249/2012004, AND
07200037/2012001**

Dear Mr. Pacilio:

On September 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. The enclosed report documents the results of this inspection, which were discussed on October 17, 2012, with Mr. D. Czufin, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

No NRC-identified or self-revealing findings were identified during this inspection. However, a licensee-identified violation which was determined to be of very low safety significance is listed in Section 4OA7 of this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the subject or severity of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Dresden Nuclear Power Station.

M. Pacilio

-2-

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Sincerely,

/RA/

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

Docket Nos. 50-237, 50-249 and 72-037
License Nos. DPR-19 and DPR-25

Enclosure: Inspection Report 05000237/2012004, 05000249/2012004, and
07200037/2012001
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000237; 05000249; and 0500072037
License Nos: DPR-19 and DPR-25

Report No: 05000237/2012004; 05000249/2012004;
07200037/2012001

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station, Units 1, 2 and 3

Location: Morris, IL

Dates: July 1 through September 30, 2012

Inspectors: G. Roach, Senior Resident Inspector
C. Phillips, Senior Resident Inspector
D. Meléndez-Colón, Resident Inspector
T. Go, Health Physicist
M. Learn, Reactor Engineer, Materials Control, ISFSI, and
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Nuclear Materials Safety (DNMS)
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Approved by: J. Cameron, Chief
Branch 6
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS.....	1
REPORT DETAILS.....	2
Summary of Plant Status.....	2
1. REACTOR SAFETY.....	3
1R01 Adverse Weather Protection (71111.01).....	3
1R04 Equipment Alignment (71111.04).....	3
1R05 Fire Protection (71111.05).....	5
1R06 Flooding (71111.06).....	5
1R07 Annual Heat Sink Performance (71111.07).....	6
1R11 Licensed Operator Requalification Program (71111.11).....	6
1R12 Maintenance Effectiveness (71111.12).....	8
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13).....	8
1R15 Operability Determinations and Functional Assessments (71111.15).....	9
1R18 Plant Modifications (71111.18).....	10
1R19 Post-Maintenance Testing (71111.19).....	11
1R20 Outage Activities (71111.20).....	11
1R22 Surveillance Testing (71111.22).....	12
1EP6 Drill Evaluation (71114.06).....	13
2. RADIATION SAFETY.....	14
2RS5 Radiation Monitoring Instrumentation (71124.05).....	14
4. OTHER ACTIVITIES.....	18
4OA1 Performance Indicator Verification (71151).....	18
4OA2 Identification and Resolution of Problems (71152).....	20
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153).....	23
4OA5 Other Activities.....	26
4OA6 Management Meetings.....	31
4OA7 Licensee-Identified Violations.....	31
SUPPLEMENTAL INFORMATION.....	1
Key Points of Contact.....	1
List of Items Opened, Closed and Discussed.....	3
List of Documents Reviewed.....	4
List of Acronyms Used.....	12

SUMMARY OF FINDINGS

Inspection Report (IR) 05000237/2012004, 05000249/2012004; 07200037/2012001;
07/01/2012 – 09/30/2012; Dresden Nuclear Power Station, Units 1, 2 & 3.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. 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

No NRC-identified or self-revealing findings were identified during this inspection.

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 2

On July 5, 2012, operators reduced power to approximately 83 percent electrical to maintain discharge canal effluent temperatures to stay in compliance with the site's National Pollutant Discharge Elimination System (NPDES) permit. Operators restored power to 100 percent on July 8, 2012.

On July 16, 2012, operators reduced power to approximately 89 percent electrical for an unplanned repair of a suction line leak on the 'A' circulating water pump. Operators restored power to 100 percent following repairs on July 19, 2012.

On August 30, 2012, operators began to downpower for an unplanned shutdown due to circulating water leaking into the condensate section of the main condenser. The licensee repaired a failed condenser waterbox vent line and restored power to 100 percent on September 7, 2012.

Unit 3

On July 4, 2012, operators reduced power to approximately 80 percent electrical to maintain discharge canal effluent temperatures to stay in compliance with the site's NPDES permit. Operators restored power to 100 percent on July 10, 2012.

On July 15, 2012, operators reduced power to approximately 88 percent electrical to maintain condenser vacuum during a planned condenser flow reversal with high cooling water temperatures. Operators restored power to 100 percent on the same day.

On September 19, 2012, operators reduced power to approximately 87 percent electrical due to air in-leakage which resulted in low condenser vacuum during a condensate demineralizer backwash. Operators restored power to 100 percent on the same day.

On September 21, 2012, operators began a core coastdown.

On September 22, 2012, operators reduced power to approximately 28 percent electrical for a planned oil addition to the 'A' reactor recirculation pump motor. Operators resumed the unit's core coastdown maximum power level of approximately 99 percent electrical on the same day.

With the exception of short periods for routine maintenance and surveillances, Unit 3 remained in core coastdown for the remainder of the reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition – Severe Thunderstorm Watch

a. Inspection Scope

Since thunderstorms with potential high winds were forecast in the vicinity of the facility for September 22, 2012, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On September 22, 2012, the inspectors walked down scaffolding adjacent to the Unit 3 bus duct cooling system, 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 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 periods of high winds or 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. The inspectors also reviewed a sample of corrective action program (CAP) items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report.

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 (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 2 emergency diesel generator (EDG) during Unit 3 EDG cooling water pump in-service test run;
- Unit 2/3 diesel fire pump (DFP) during Unit 1 DFP capacity test; and
- Unit 2 'A' core spray during 'B' core spray planned maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

During the weeks of September 10 and September 17, 2012, the inspectors performed a complete system alignment inspection of the Unit 3 containment cooling service water (CCSW) 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 lineups; 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 8.2.6A, Unit 2 Reactor Feed Pump Vent H2 Seal Area, Elevation 538’;
- Fire Zone 1.1.1.4, Unit 3 Secondary Containment, Elevation 570’;
- Fire Zone 1.1.1.6, Reactor Building Refueling Floor, Elevation 613’;
- Fire Zone 8.2.4, Turbine Building 2/3 Cable Tunnel, Elevation 502’; and
- Fire Zone 6.2, Auxiliary Electrical Equipment Room, Elevation 517’.

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 five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Underground Vaults

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering

devices were used, such as a sump pump, the device was operable and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- Station blackout (SBO) number 2 and SBO number 3 cable vaults.

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

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of the 2B reactor building closed cooling water heat exchanger to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. Documents reviewed for this inspection are listed in the Attachment to this document.

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On July 30, 2012, and September 4, 2012, the inspectors observed two separate crews of licensed operators in the plant's simulator during licensed operator requalification

training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

On July 5, 2012, the inspectors observed Unit 2 control rod drive exercising; on August 7, 2012, the inspectors observed Unit 3 circulating water flow reversal; and on September 19, 2012, the inspectors observed the operator's response to a degraded Unit 3 condenser vacuum and unplanned down power. These were activities that required heightened awareness or were 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;
- correct use and implementation of procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions.

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 samples as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- 2/3 standby liquid control (SBLC); and
- 2/3 standby gas treatment (SBGT).

The inspectors reviewed licensee 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)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related

equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Unit 3 Yellow Risk due to unplanned isolation of the isolation condenser during surveillance testing;
- Unit 2 'A' circulating water pump emergent repairs;
- Unit 2/3 diesel fire pump (DFP) during Unit 1 DFP inspection and overhaul;
- Unit 2 'A' core spray during 'B' core spray planned maintenance; and
- Failure to Reset 2 'A' Recirculation Pump MG-Set Scoop Tube

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.

Specific documents reviewed during this inspection are listed in the Attachment to this report. 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 Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Operability Evaluation 12-003, "Byron Event;"
- Issue Report (IR) 1353820, "3-1501-3A Diagnostic Test Required Emergent Evaluations;"
- IR 1381008, "Part 21 for Rosemount 710DU Trip Units;"
- IR 1386885, "Group V Isolation During DIS 1300-07;" and
- IR 1374428, "U2 EDGCWP [emergency diesel generator cooling water pump] Failed to Start."

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine

whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification(s):

- Auxiliary boiler natural gas line.

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 permanent plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- WO 938055, "D1 6Y TSTR PM Diesel Fire Pump Inspection & Overhaul;"
- WO 1561514, "U1 DFP Relief Valve Does Not Seat;"
- 3B Core Spray Fragnet;
- WO 01568135-01, "3A/B Recirc Pump Speed Mismatch;" and
- WO 01569605, "U2 DW [drywell] Entry Identified Leakage from 2-0220-58B"

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 PM 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 five PM testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Other Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities for a forced mid-cycle outage of Unit 2 that began on August 30, 2012, and continued through September 5, 2012. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed portions of the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, selected clearances to include containment isolation valve repairs and reactor coolant system leakage repairs, control and monitoring of decay heat removal, control of containment activities, startup and heatup activities, and identification and resolution of problems associated with the outage. The licensee entered Mode 3 and progressed to Mode 4 on August 30 in order to address a rapidly degrading chemistry condition in the Unit 2 condensate and feedwater system. A failure in vent piping associated with the main condenser circulating water south central water box enabled circulating water to enter the steam side of the main condenser. The introduction of the raw circulating water added impurities to the condensate water which would have eventually exhausted condensate demineralizers and spread to the reactor had the plant not been placed in a cold shutdown condition. The licensee plugged the affected piping prior to startup and has generated a work order to remove the vent line, which is no longer utilized when filling the circulating water side of the main condenser, during the next Unit 2 refueling outage.

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- WO 1533903-01, "Dresden Unit 2 Qtr TS 2A SBLC Pump Test for In-Service Testing Surveillance," (IST);
- WO 01403433-01, "Dresden Unit 3 18M TS Bus 33-1 Degraded Voltage Surveillance," (routine);
- WO 1450508, "Dresden Unit 1 AN TSTR/COM Diesel Fire Pump Flow Capacity Test," (routine);
- WO 1514132, "Dresden Unit 2 SAN TS Diesel Generator Fast Start Operability Surveillance," (routine); and
- WO 1530522, "Dresden Units 2/3 QTR PM Emergency Diesel Pump (Flood Pump)" (routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;

- acceptance criteria were 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 (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable, 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, and one inservice testing sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on September 12, 2012, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and the Technical Support Center to determine whether the event classification, notifications, and

protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS5 Radiation Monitoring Instrumentation (71124.05)

This inspection constituted a partial sample as defined in IP 71124.05-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated TS requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors reviewed a listing of in-service survey instrumentation including air samplers and small article monitors (SAMs), along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors reviewed personnel contamination monitors (PCMs) and PMs, including whole-body counters, to detect workers' internal contamination. The inspectors reviewed this list to assess whether an adequate number and type of instruments were available to support operations.

The inspectors reviewed licensee and third-party evaluation reports of the radiation monitoring program since the last inspection. These reports were reviewed for insights into the licensee's program and to aid in selecting areas for review ("smart sampling").

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys. The inspectors reviewed the calibration and source check procedures for adequacy and as an aid to smart sampling.

The inspectors reviewed the area radiation monitor (ARM) alarm setpoint values and setpoint bases as provided in the TSs and the UFSAR.

The inspectors reviewed effluent monitor alarm setpoint bases and the calculation methods provided in the Offsite Dose Calculation Manual (ODCM).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down effluent radiation monitoring systems, including at least one liquid and one airborne system. Focus was placed on flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors assessed whether the effluent/process monitor configurations aligned with ODCM descriptions and observed monitors for degradation and out-of-service tags.

The inspectors selected portable survey instruments that were in use or available for issuance and assessed calibration and source check stickers for currency as well as instrument material condition and operability.

The inspectors observed licensee staff performance as the staff demonstrated source checks for various types of portable survey instruments. The inspectors assessed whether high-range instruments were source checked on all appropriate scales.

The inspectors walked down ARMs and containment atmosphere monitors (CAM) to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

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

b. Findings

No findings were identified.

.3 Calibration and Testing Program (02.03)

Laboratory Instrumentation

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicated that the frequency of the calibrations was adequate and there were no indications of degraded instrument performance.

The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

b. Findings

No findings were identified.

Whole Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform WBC functional checks before daily use of the instrument and assessed whether check sources were appropriate and aligned with the plant's isotopic mix.

The inspectors reviewed WBC calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

b. Findings

No findings were identified.

Post-Accident Monitoring Instrumentation

a. Inspection Scope

The inspectors selected containment high-range monitors and reviewed the calibration documentation since the last inspection.

The inspectors assessed whether that electronic calibration was completed for all range decades above 10 rem/hour and whether at least one decade at or below 10 rem/hour was calibrated using an appropriate radiation source.

The inspectors assessed whether calibration acceptance criteria were reasonable, accounted for the large measuring range and the intended purpose of the instruments.

The inspectors selected two effluent/process monitors that were relied on by the licensee in its emergency operating procedures as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments.

The inspectors reviewed the licensee's capability to collect high-range, post-accident iodine effluent samples.

As available, the inspectors observed electronic and radiation calibration of these instruments to assess conformity with the licensee's calibration and test protocols.

b. Findings

No findings were identified.

Portal Monitors, Personnel Contamination Monitors, and Small Article Monitors

a. Inspection Scope

For each type of these instruments used on site, the inspectors assessed whether the alarm setpoint values were reasonable under the circumstances to ensure that licensed material is not released from the site.

The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

b. Findings

No findings were identified.

Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimetry, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for at least one of each type of instrument. For portable survey instruments and ARMs, the inspectors reviewed detector measurement geometry and calibration methods and had the licensee demonstrate use of its instrument calibrator as applicable. The inspectors conducted a comparison of instrument readings versus an NRC survey instrument if problems were suspected.

As available, the inspectors selected portable survey instruments that did not meet acceptance criteria during calibration or source checks to assess whether the licensee had taken appropriate corrective action for instruments found significantly out of calibration (greater than 50 percent). The inspectors evaluated whether the licensee had evaluated the possible consequences of instrument use since the last successful calibration or source check.

b. Findings

No findings were identified.

Instrument Calibrator

a. Inspection Scope

As applicable, the inspectors reviewed the current output values for the licensee's portable survey and ARM instrument calibrator unit(s). The inspectors assessed whether the licensee periodically measures calibrator output over the range of the instruments used through measurements by ion chamber/electrometer.

The inspectors assessed whether the measuring devices had been calibrated by a facility using National Institute of Standards and Technology traceable sources and whether corrective factors for these measuring devices were properly applied by the licensee in its output verification.

b. Findings

No findings were identified.

Calibration and Check Sources

a. Inspection Scope

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

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were 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 that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Mitigating Systems and Public Radiation Safety

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Heat Removal System performance indicator (MS08) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the second quarter 2011 through the second quarter 2012. 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, IRs, event reports, MSPI derivation reports, and NRC Integrated IRs for the period of second quarter 2011 through the second quarter 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI

guidance. The inspectors also reviewed the licensee's 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 MSPI heat removal system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Residual Heat Removal System performance indicator (MS09) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the second quarter 2011 through the second quarter 2012. 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, IRs, MSPI derivation reports, event reports and NRC Integrated IRs for the period of second quarter 2011 through the second quarter 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's 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 MSPI residual heat removal system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems performance indicator (MS10) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the second quarter 2011 through the second quarter 2012. 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, IRs, MSPI derivation reports, event reports and NRC Integrated IRs for the period of second quarter 2011 through the second quarter 2012 to validate the accuracy of the submittals. The inspectors reviewed

the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's 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 MSPI cooling water system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent TS (RETS)/ODCM Radiological Effluent Occurrences PI (PR01) for the period from the first quarter 2011 through the first quarter 2012. 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 IR database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

40A2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.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 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 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the operator workarounds (OWAs) on system availability and the potential for improper operation of the system, for

potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the Attachment to this report were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their CAP and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

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

b. Findings

No findings were identified.

.4 Selected Issue Follow-Up Inspection: Issue Report 1369775, "Conflict of Procedures"

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a potential for a conflict in procedures between security and fire protection procedures in certain security scenarios in IR 1369775, "Conflict of Procedures." The inspectors chose this issue for an in-depth review due to the safety and risk significance involved with potentially conflicting procedures. The inspectors reviewed IR 1369775, "Conflict of Procedures," DOA 0010-18, "Escalated Security Event/Hostile Force Intrusion," and DSSP 0100-CR, "Hot Shutdown Procedure – Control Room Evacuation." In addition, the inspectors interviewed members of the operations department.

The original concern described in IR 1369775, "Conflict of Procedures," was that in one procedure operators were directed outside while in the other procedures operators were prevented from going outside. The inspectors determined whether the operators went outside or not would be dependent upon the situation at the time and was not a potential conflict.

The inspectors did identify, however, that there were steps in DOA 0010-18, "Escalated Security Event/Hostile Force Intrusion," and DSSP 0100-CR, "Hot Shutdown Procedure – Control Room Evacuation" where there was a potential conflict. For example, in DOA 0010-18 if certain circumstances arose the Shift Manager was directed to implement DSSP 0100-CR, "Hot Shutdown Procedure – Control Room Evacuation." From that point DOA 0018 continued on and required similar actions as DSSP 0100-CR.

However, the two procedures required the similar procedures be carried out by different operators. In one case it was the Unit 2 equipment operator and in another case it was the Unit 3 equipment operator. The inspectors concluded that, in the circumstances where operations were being directed from outside the control room, these actions could be performed but the personnel conflicts could result in some actions not being carried out in a timely manner.

On June 29, 2012, the licensee wrote IR 1383557, "NRC Questioned the DOA 0010-18 and DSSP 0100-CR Flow Path." The licensee did not identify the issue until pointed out by the inspectors. The licensee planned to make some procedure changes but had neither made procedure changes nor marked up a procedure to review by the end of the inspection period. The due date for the procedure markups was moved twice.

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000237/2011-005-00, "Standby Liquid Control Explosive Valve Failure"

In August 2009 the licensee upgraded the Unit 2 standby liquid control (SBLC) explosive valve heat tracing under Engineering Change (EC) 373699, "Upgrade U2 Standby Liquid Heat Tracing," Revision 0. The licensee replaced the existing heat tracing and insulation on the SBLC suction, discharge, and relief lines, and the injection pumps. The heat tracing was designed to maintain the sodium pentaborate at a temperature of 95.5°F (to provide margin above the TS minimum temperature of 83°F) when the reactor building is at a temperature of 65°F. The heat tracing installation was intended to stop at the spool piece before the squib valve. However, during the modification, the installers wrapped the Unit 2 squib valve 2A with heat tracing. The inspectors determined that the licensee did not perform an appropriate inspection upon completion of the modification that should have identified the inappropriate heat tracing installation. As a result, the trigger and primer of the squib valve were subjected to elevated temperatures.

During an injection test performed on October 28, 2011, the 2A SBLC squib valve in Unit 2 failed to function properly which resulted in no flow of demineralized water from the test tank to the reactor. The licensee entered the issue into their corrective action program as IR 01282544, "No Flow to Reactor During DOS 1100-03, SBLC Injection Test," dated October 28, 2011, and subsequently performed equipment apparent cause evaluation (EACE) 1282544-05 to determine the cause of the failure. The licensee determined that the apparent cause of the failure of the squib valve to fire properly was thermal degradation of the primer's explosive material. This conclusion was based on a root cause investigation performed by the squib valve vendor. The licensee documented that the primer experienced temperatures above 120°F, the upper storage and installed temperature limit of the primer. The licensee determined that excessive heating resulting from the heat tracing around the 2A squib valve contributed to the thermal degradation. At the time of the Licensee Event Report (LER) submittal the root cause of

the problem was unknown. The licensee planned to submit a supplemental LER at a later date.

A Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criteria X, "Inspection," was documented in Inspection Report (IR) 05000237/2012008 for the failure to execute an appropriate inspection for work performed on the Units 2 and 3 SBLC pumps and associated equipment. Specifically, the licensee failed to determine via inspection that the heat tracing was properly installed on the Unit 2 2A SBLC components and that insulation material removed around the Unit 3 SBLC pumps was properly reinstalled post maintenance (NCV 05000237/2012008-02).

The licensee had neither determined the root cause nor the corrective actions by the time the LER was due and planned to make a supplemental report to discuss the root cause and corrective actions associated with this event. The inspectors reviewed the corrective actions associated with this event as documented in the licensees' IR 1282544 and EACE 1282544-05 and had no concerns. No additional findings or violations of NRC requirements were identified. This LER is closed.

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

.2 (Closed) Licensee Event Report 05000237/2012-001-00, "Entire Division of Average Power Range Monitor Neutron Flux-High Channels Inoperable as a Result of Power Maneuver"

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 inspectors reviewed the licensee's LER and Apparent Cause Evaluation IR 1328879-03), reviewed Operations procedure OP-AA-112-101, "Shift Turnover and Relief," Revision 8, and interviewed licensee operations personnel. An NCV of 10 CFR 50.72(b)(3)(v)(D) was documented in IR 05000237/2012002 for the failure to make a required 8 hour notification to the Nuclear Regulatory Commission (NCV 05000237/2012002-08). The licensee had not determined corrective action by the time the LER was due and planned to make a supplemental report to discuss the corrective actions associated with this event. The inspectors reviewed the corrective actions associated with this event as documented in the licensees' IR 1328879 and apparent cause evaluation and had no concerns. No additional findings or violations of NRC requirements were identified. Documents reviewed in this inspection are listed in the Attachment to this report. This LER is closed.

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

.3 (Closed) Licensee Event Report 05000237, 05000249/2012-002 00: "Inlet Steam Drain Pot Line Leaks Result in High Pressure Coolant Injection Inoperabilities"

The inspectors reviewed the subject LER to evaluate the licensee's response to steam leaks in the Unit 2 high pressure coolant injection (HPCI) system that occurred on May 22, 2012, and the Unit 3 HPCI system on June 10, 2012. On May 22, 2012, plant

operators identified a through wall leak in an elbow located on the HPCI inlet drain pot inboard drain line to the main condenser. The Unit 2 HPCI system was isolated and declared inoperable and the appropriate TS action statements were entered and performed. The licensee subsequently determined that the failure mechanism was erosion of the chrome-molybdenum material elbow caused by liquid impingement. On June 10, 2012, while performing additional walkdowns of the HPCI system as a corrective action for the May 22, 2012 event, plant operators discovered that a similar through wall leak on a chrome-molybdenum elbow on the Unit 3 HPCI inlet drain pot inboard drain line to the main condenser had developed. The Unit 3 HPCI system was isolated and declared inoperable and the appropriate TS action statements were entered and performed.

The licensee replaced both chrome-molybdenum elbows with stainless steel elbows as stainless steel is less susceptible to liquid impingement corrosion. In addition the licensee has scheduled work orders to replace both unit's inlet drain pot inboard drain lines and associated components with stainless steel materials in November 2012 (Unit 3) and March 2013 (Unit 2).

The inspectors' review of the LER did not identify any violations of NRC regulations. Documents reviewed in this inspection are listed in the Attachment to this report. This LER is closed.

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

.4 (Closed) Licensee Event Report 05000249/2012-001-00, "Unexpected Isolation of the Isolation Condenser Due to Test Switch Failure"

On July 10, 2012, the licensee entered TS 3.5.3 because the Unit 3 isolation condenser Group V containment isolation logic inadvertently actuated during surveillance testing of the isolation condenser high steam flow logic circuit. With a Group V containment isolation actuation in place, the Unit 3 Isolation Condenser became inoperable and incapable of performing its design function of providing cooling to the reactor core when the reactor became isolated from the main condenser. The inspectors reviewed the licensee's LER, Apparent Cause Evaluation (IR 1386898-03), Quality Assurance Manual, and corrective actions associated with the event. The inadvertent actuation of the containment isolation logic occurred when the test switch installed in the high steam flow logic circuit failed to provide a continuous path for current flow preventing relay 3-0595-115A from remaining energized. With the relay deenergized, the isolation logic actuated cutting off the isolation condenser from the reactor coolant system. The licensee determined that the switch failed to provide an adequate path for current flow due to grease on the switch's stationary contact. The switch was tested satisfactorily at rated voltage and current conditions with a test circuit prior to installation in the actual flow logic circuit. The inspectors reviewed the corrective actions associated with this event as documented in the licensee's IR 1386898 and the apparent cause evaluation and did not identify a licensee performance deficiency nor a finding or violation of NRC requirements. This LER is closed.

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

.5 (Closed) Licensee Event Report 05000249/2010-002-01, "Main Steam Isolation Valve Leakage Exceeds Technical Specifications Allowable Limits"

On November 1, 2010, Dresden Unit 3 had been shut down for a refueling outage. After entering Mode 4, plant personnel performed the local leak rate test (LLRT) for the main steam isolation valves (MSIVs). The licensee identified that the leakage rate on three MSIVs exceeded the allowable limits specified in TS Surveillance Requirement 3.6.1.3.10. The 3-0203-1C, 3-0203-1D and 3-0203-2D valves were found to have 52.8, 34.6, and 36.9 scfh leakages, respectively. Based on the as-found leakage rates, Surveillance Requirement 3.6.1.3.10 was not met. The licensee documented this condition in IRs 1133829, 1133832 and 1133833, respectively. The inspectors reviewed EACE 1133833-03. The EACE stated the apparent cause was a non-optimal valve design allows the plug to become misaligned with the seat ring. The valve has a Y-pattern design that inherently forces the plug off center from the seat ring due to gravity. This problem was exclusive to Dresden and Quad Cities; other BWRs utilize other vendor designs. This issue was identified by the licensee as a chronic problem in 2004. There have been multiple failures of MSIVs to pass LLRTs for many years at both Dresden and Quad Cities. However, only one of three valves has failed a previous LLRT in the last 14 years. The EACE identified that although this issue was tracked as Chronic Problem 171393-28 the issue had no definitive owner/manager sponsor responsible for pushing it to completion. As further actions were developed, the actions required substantial resources that were not available. A fix has not yet been established for this chronic problem. A manager was assigned as a sponsor for this program in August 2012 in response to the comments in the EACE. The licensee has stated that this issue is not a significant condition adverse to quality.

Licensee Event Report 05000249/2010-002-00, "MSIV Leakage Exceeds TSs Allowable Limits," was closed; and a licensee identified violation for exceeding TS limits was also identified in IR 05000249/2011-03. This LER is closed.

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

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000237/2010004-02; 05000249/2010004-02: "Failure to Seal Holes in the Floor Above the Emergency Core Cooling System Corner Rooms"

The inspectors identified that there were small holes in the Unit 2 reactor building 517' elevation floor. These holes bypassed the berms that surround the stairways to the Unit 2 emergency core cooling system (ECCS) corner rooms. The inspectors reviewed DR PSA-012, "Internal Flood Evaluation Summary and Notebook," dated May 2009. This document supported the licensee's probabilistic risk assessment, but was not part of the licensing basis. This document stated that the berms around the ECCS corner room stairs were credited in the internal flooding analysis. Holes in the reactor building floor would be of concern during an event that included a crack or rupture of the service water line that was in the overhead of the 545' elevation of the reactor building. The inspectors reviewed licensing basis documentation and identified only one reference to flooding caused by service water in the reactor building. A draft safety evaluation from Systematic Evaluation Program Topic III-5.B, "Pipe Break Outside Containment," dated January 17, 1980, stated that the protection from a medium energy line break caused by a Reactor Building 545' elevation service water failure was adequate. No further details

were provided. The licensee documented the inspectors' concern in IR 1108059, "NRC Identified Concern." Through calculations performed the licensee concluded that in a worse case service water system break both ECCS corner rooms would flood to a point which would make ECCS equipment inoperable in 35 minutes versus 44 minutes if there were no holes in the floor. The licensee determined that this was sufficient time to isolate the flooding by securing all service water pumps. The licensee sealed the holes in December 2011.

The inspectors determined that there was no violation of regulatory requirements. This item is closed.

.2 (Closed) Unresolved Item 05000237/2011002-03; 05000249/2011002-03: "Adequacy of Control Room Ventilation Smoke Purge Function"

The inspectors previously identified an Unresolved Item regarding the adequacy of the control room ventilation smoke purge function. The inspectors identified that the inlet and outlet to the control room ventilation 'A' train were around a corner and within 5 feet of one another on the exterior of the turbine building. The inspectors were concerned that some environmental conditions could result in exhausted smoke being drawn back into the intake of the smoke purge system resulting in the failure to purge the smoke from the control room.

Fire Protection Report Section 2.3.1.5, stated, "The fresh air supply intakes to areas containing safety-related equipment are located away from the exhaust air outlets and smoke vents of other areas." The UFSAR Section 6.4.4.3 described the smoke purge function. The control room HVAC system was designed to isolate and maintain the design conditions within the control room during fires in either the control room or outside the emergency zone.

The UFSAR stated, smoke detectors, located in the control room return air ducts, will annunciate in the control room and the train 'A' HVAC system will be switched manually to the smoke purge mode. During this mode, the system supplies 100 percent outdoor air. This will prevent the recirculation of smoke into any of the occupied areas in the event of fire while exhausting 100 percent of the return air to the outdoors. The smoke purge capability is only available on train 'A'. The inspectors were concerned that the relative positions of the smoke purge inlet and outlet would make the statement that the recirculation of smoke into occupied areas (control room) would be prevented was inaccurate.

The inspectors reviewed applicable American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) and National Fire Protection Association (NFPA) standards for ventilation systems. Dresden Station was designed and constructed prior to the earliest ventilation standard that the inspectors identified. The earliest addition of NFPA 92A, "Smoke Control Systems," 1988, stated that the inlet of the ventilation system should be as far away from the outlet as possible. The licensee was not committed to this standard.

The inspectors reviewed the licensee's response to Generic Letter 2003-01, "Control Room Habitability." The licensee committed to implementing an administrative TS for assessing and testing the Control Room Envelope (CRE). Technical Specification 5.5.14, "Control Room Envelope Habitability Program,"

required that a CRE habitability program shall be established and implemented to ensure that CRE habitability is maintained such that, with an operable control room emergency ventilation system, CRE occupants can control the reactor safety under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The Control Room Envelope Habitability Program was implemented by ER-AA-390-1001, "Control Room Envelope Habitability Program Implementation," Revision 6. Procedure ER-AA-390-1001 required a periodic assessment to ensure that the plant maintains the CRE Habitability license and design basis.

The inspectors reviewed the last licensee CRE Habitability assessment which was completed on March 30, 2012. The assessment determined that adequate controls were in place to ensure the operators maintain the ability to safely shut down the plant during a smoke event originating inside or outside the control room. The assessment stated that for a smoke event that initiated in the control room operators would enter DOA 5750-04, "Smoke, Noxious Fumes, or Airborne Contaminants in the Control Room," Revision 26. The first step of DOA 5740-04 required that operators don self contained breathing apparatus (SCBA) and control room breathing air be initiated before smoke purge was initiated.

The inspectors concluded that Fire Protection Report Section 2.1.3.5 and UFSAR Section 6.4.4.3 were inaccurate because the fresh air supply intakes to areas containing safety-related equipment were not located away from the exhaust air outlets and smoke vents of other areas, and the location of the air supply inlet and outlet would not prevent the recirculation of smoke into any of the occupied areas in the event of fire. However, there were no standards at the time of construction to prevent the current design and location of the smoke purge inlet and outlet. In addition, the inspectors concluded that the requirement to don SCBAs and initiate control room breathing air at the onset of a smoke event in the control room ensured the operators maintained the ability to safely shut down the plant during a smoke event originating inside the control room even if outside environmental conditions resulted in exhausted smoke being blown back into the smoke purge inlet.

The inspectors concluded that no violation of regulatory requirements occurred. This item is closed.

.3 (Closed) Unresolved Item 05000237/2011005-03: "Unplanned Unit 2 Secondary Containment Technical Specification Entry"

The inspectors identified an unresolved item regarding the causal factors related to the regulatory requirements associated with the circumstances surrounding the Unit 2 loss of secondary containment event on December 21, 2011. At the end of the inspection period for IR 05000237/2011005, the licensee was still working on a root cause to identify all causal factors related to this issue. The inspectors reviewed the root cause report (IR 1305358-05), interviewed licensee personnel, and discussed the results of the root cause report with licensee management.

On December 21, 2011, WO 1450006-01, "DRESDEN UNIT 2 SA PM 517 RB/TB INTLK DOOR (2-5850-52) ELECTRICAL CHECKS," was being performed 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 9 seconds. This caused entry 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 inspectors determined that there was a violation of NRC requirements and that appropriate corrective actions were applied. The violation was documented in IR 05000237/2012-002. This item is closed.

.4 Operation of an Independent Spent Fuel Storage Facility Installation at Operating Plants (60855.1)

a. Inspection Scope

The inspectors observed and evaluated select licensee loading, processing, and transfer operations of the first and third canister during the licensee's 2012 dry fuel storage campaign to verify compliance with the applicable certificate of compliance (CoC) conditions, the associated TS, and Independent Spent Fuel Storage Installation (ISFSI) procedures. Specifically, the inspectors observed: loading and independent verification of the fuel assemblies into the multi-purpose canister (MPC); decontamination and surveying; welding and non destructive testing of the MPC lid; draining of water; and vacuum drying. The licensee used the Holtec International HI-STORM 100 Cask System for this campaign.

The inspectors reviewed procedures used to perform ISFSI preparation, loading, sealing, transfer, monitoring, and storage activities. The inspectors reviewed applicable heavy loads procedures and inspection documentation to determine compliance with the site's heavy loads program. The inspectors reviewed select documents, in part, after the licensee completed certain loading activities.

The inspectors reviewed the licensee's evaluations associated with fuel characterization and selection for storage. The inspectors reviewed the licensee's evaluation to characterize fuel as intact fuel, damaged fuel, or fuel debris. The licensee did not plan to load any damaged fuel assemblies or fuel debris during this campaign. The inspectors reviewed the campaign cask fuel selection packages to verify that the licensee was loading fuel in accordance with the CoC approved contents.

The inspectors reviewed a number of condition reports and the associated corrective actions since the last ISFSI inspection. The inspectors also reviewed 72.48 screenings and changes to the licensee's 10 CFR 72.212 evaluations since the last ISFSI inspection.

The licensee maintains two ISFSI pads at the Dresden Nuclear Power Station. The East ISFSI pad stores HI-STAR 100 and HI-STORM 100 storage casks. The West ISFSI pad stores HI-STORM 100 storage casks. The inspectors performed tours of both ISFSI pads to assess the material condition of the pads and the loaded HI-STAR 100 and HI-STORM 100 storage casks. The inspectors reviewed the licensee's evaluations of flammable materials near the ISFSI and their radiation monitoring program. Additionally,

the inspectors performed independent radiation surveys around the ISFSI pad and storage casks.

b. Findings

No findings of significance were identified.

.5 (Discussed) NRC Temporary Instruction 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns, and NRC Temporary Instruction 2515/188, Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

a. Inspection Scope

Inspectors accompanied the licensee on a sampling basis, during their flooding and seismic walkdowns, to verify that the licensee's walkdown activities were conducted using the methodology endorsed by the NRC. These walkdowns are being performed at all sites in response to a letter from the NRC to licensees, titled "Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340). The inspectors also observed a simulation of a portion of the licensee's flood response procedure DOA 0010-04, Floods, Revision 32 and performed independent walkdowns of structures, systems, and components that would most impact the safe shutdown of the Units 2 and 3 reactors during a flooding or seismic event.

Enclosure 3 of the March 12, 2012, letter requested licensees to perform seismic walkdowns using an NRC-endorsed walkdown methodology. Electric Power Research Institute (EPRI) document 1025286 titled, "Seismic Walkdown Guidance," (ADAMS Accession No. ML12188A031) provided the NRC-endorsed methodology for performing seismic walkdowns to verify that plant features, credited in the current licensing basis (CLB) for seismic events, are available, functional, and properly maintained.

Enclosure 4 of the letter requested licensees to perform external flooding walkdowns using an NRC-endorsed walkdown methodology (ADAMS Accession No. ML12056A050). Nuclear Energy Industry Document 12-07 titled, "Guidelines for Performing Verification Walkdowns of Plant Protection Features," (ADAMS Accession No. ML12173A215) provided the NRC-endorsed methodology for assessing external flood protection and mitigation capabilities to verify that plant features, credited in the CLB for protection and mitigation from external flood events, are available, functional, and properly maintained.

b. Findings

The inspectors determined that additional information is needed regarding the external flooding scenario in order to fully assess the viability of the external flooding procedure. Findings or violations associated with the flooding and seismic walkdowns, if any, will be documented in a future integrated IR.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 17, 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.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The areas of radiation monitoring instrumentation; and RETS/ODCM radiological effluent occurrences PI verification with D. Czufin, Site Vice President, on July 27, 2012.
- The ISFSI operational inspection on August 2, 2012. The inspectors presented the inspection results to members of the licensee management and staff.

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

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green or SLIV) was identified by the licensee and is a violation of NRC requirements, which meet the criteria of Section 2.3.2 of the NRC Enforcement Policy, NUREG 1600, for being dispositioned as an NCV.

10 CFR Part 50 Appendix B, Criterion III, "Design Control," states, in part, that "the design control measures must provide for verifying or checking the adequacy of design by methods such as design reviews, alternate or simplified calculational methods, or by a suitable testing program." Contrary to the above the licensee failed to verify adequacy of the design for HI-STORM 100 cask system laydown areas in the reactor building. The licensee identified that during various stages of fuel transfer operations inside the plant, analysis shows that the casks would uplift during a seismic event resulting in additional impact loads on the structural floors as well as the low profile transporter. The licensee, however, did not evaluate the affected structures for the additional impact loads. The licensee entered this issue into the CAP as IR 01251532, IR 01266469, and IR 01268258 and completed revised analyses and plant modifications where necessary. The finding was determined to have very low safety significance.

10 CFR 72.146 "Design Control," states, in part, that "the design control measures must provide for verifying or checking the adequacy of design by methods such as design reviews, alternate or simplified calculational methods, or by a suitable testing program." Contrary to the above the licensee failed to verify adequacy of the design of the HI-STORM 100 lift yoke. The licensee identified that they failed to adequately determine the bending stresses in lifting pins and shear stresses in the pin supporting plate and the definition of a dual load path component was incorrectly applied to the strong back components of the lift yoke. The finding was determined to have very low safety significance because the revised calculations decreased the rating of the lift yoke from

125 tons to 110 tons, and the maximum lifted load is less than 110 tons. The licensee entered this issue into the CAP as IR 1327578 and IR 1293137 and implemented the corrective actions to revise the calculations and de-rate the lift yoke.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Czufin, Site Vice President
S. Marik, Station Plant Manager
D. Anthony, NDES Manager
T. Barren, Sr. Program Manager – Dry Cask Storage
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
D. Doggett, Emergency Preparedness Coordinator
H. Dodd, Regulatory Assurance Manager
J. Fox, Design Engineer
J. Freeman, Corporate Engineering
G. Gates, Operations
D. Glick, Radioactive Material Shipping Specialist
G. Graff, Nuclear Oversight Manager
M. Hosain, Site EQ Engineer
R. Johnson, Chemist RETS/ODCM
L. Jordan, Training Director
B. Kapellas, Operations Director
D. Ketchledge, Engineering
J. Knight, Director, Site Engineering
M. Knott, Instrument Maintenance Manager
J. Kish, Site ISI
S. Kvasnicka, NDE Level III
D. Leggett, Chemistry Manager
G. Lupia, Corporate Buried Pipe Engineer
T. Mohr, Supervisor, Engineering Programs
P. Mankoo, Radiation Protection
G. Morrow, Operations
M. McDonald, Maintenance Director
T. Mohr, Engineering Program Manager
P. O'Brien, Regulatory Assurance – NRC Coordinator
D. O'Flanagan, Security Manager
M. Otten, Operations Training Manager
M. Pavey, Health Physicist
P. Quealy, Emergency Preparedness Manager
B. Rakes, Project Manager – Dry Cask Storage
R. Ruffin, Licensing Engineer
D. Schiavoni, Engineering
J. Sipek, Work Control Director
R. Stachniak, Engineering
R. Sisk, Buried Pipe Program Owner

L. Torres, Engineering
J. Wegner, Engineer – Dry Cask Storage

Nuclear Regulatory Commission

S. West, Director, Division of Reactor Projects
J. Cameron, Chief, Division of Reactor Projects, Branch 6

IEMA

R. Zuffa, Illinois Emergency Management Agency

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None.

Closed

05000237/2011-005-00	LER	Standby Liquid Control Explosive Valve Failure (4OA3)
05000237/2012-001-00	LER	Entire Division of APRM Neutron Flux-High Channels Inoperable as a Result of Power Maneuver (4OA3)
05000237/2012-002-00 05000249/2012-002 00	LER	Inlet Steam Drain Pot Line Leaks Result in HPCI Inoperabilities (4OA3)
05000249/2012-001-00	LER	Unexpected Isolation of the Isolation Condenser Due to Test Switch Failure (4OA3)
05000249/2010-002-01	LER	MSIV Leakage Exceeds Technical Specifications Allowable Limits (4OA3)
05000237/2010004-02 05000249/2010004-02	URI	Failure to Seal Holes in the Floor Above the Emergency Core Cooling System (ECCS) Corner Rooms (4OA5)
05000237/2011002-03 05000249/2011002-03	URI	Adequacy of Control Room Ventilation Smoke Purge Function (4OA5)
05000237/2011005-03	URI	Unplanned Unit 2 Secondary Containment Technical Specification Entry (4OA5)

Discussed

NRC Temporary Instructions 2515/187 and 2515/188	TI	NRC TI 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns, and NRC TI 2515/188, Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns (4OA5)
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LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection (71111.01)

- DOA 0010-02, "Tornado Warning/Severe Winds," Revision 17

1R04 Equipment Alignment (71111.04)

- IR 1394774, "NRC Issues During Plant Tour"
- DOP 1400-M1, "Unit 2 Core Spray System," Revision 24
- Drawing M-23 Sheet 1, Diagram of Fire Protection Piping
- Drawing M-360 Sheet 1, Diagram of Low Pressure Coolant Injection System
- Drawing M-360 Sheet 2, Diagram of Low Pressure Coolant Injection Piping
- Drawing 277LN001-002, Revision 1, CCSW Pump Packing Water System
- Drawing 277LN001-001, CCSW Subsystem 1
- Drawing 277LN001-004, CCSW Keepfill

1R05 Fire Protection (71111.05)

- Analysis No. DRE97-0105, "Determination of Combustible Loading," Revision 8
- 132 U3RB-32, Pre-Fire Plan, Unit 2/3 Refueling Floor Elevation 613', Revision 1
- 145 U2TB-48, Pre-Fire Plan, Unit 2 Reactor Feed Pump Vent Hydrogen Seal Area Elevation 538', Revision 4
- 128 U3RB-29, Pre-Fire Plan, Reactor Building General Area Elevation 570', Revision 2
- 182/3 U2/3Cable Tunnel, Pre-Fire Plan, Unit 2/3 Cable Tunnel Elevation 502', Revision 2
- 143 U2TB-46, Pre-Fire Plan, Unit 2/3 Computer Room & Auxiliary Electrical Equipment Room Elevation 517', Revision 2
- IR 1386463, "NRC Concerns"
- IR 1392303, "D2/3 Cable Tunnel Housekeeping Inspection"
- IR 1403364, "Monthly Cable Tunnel Housekeeping Inspection"

1R07 Annual Heat Sink Performance (71111.07)

- IR 1412176, "Live Clams & Biological Growth Found in 2B RBCCW HT EX (PMC)"
- IR 1414012, "2B RBCCW HX CO not Hung per Schedule"
- IR 1417191, "2B RBCCW Hx Failed PMT"
- WO 972492, "D2 6Y PM RBCCW "B" Hx Eddy Current Test"

1R11 Licensed Operator Requalification Program (71111.11)

- DOP 4400-08, "Circulating Water System Flow Reversal," Revision 58
- Training Scenario, LT 181 – Reactor Building ventilation failure; Personnel emergency; Bus swap; Loss of MCC 29-1; Fuel element failure; Hydraulic ATWS; Loss of three Fission Product Barriers, Revision 00
- Training Scenario, LT 182 – Swap of EHC Pumps; Loss of 125VDC/Isolation Condenser Recovery; CRD Suction Filter Plugging; Circ Pump Failure; Loss 24/48 Distribution Panel 2A;

Steam Leak in the Drywell; Fuel Element Failure/Hydraulic ATWS; General Emergency (Loss of 3 Fission Product Barriers), Rev. 00

1R12 Maintenance Effectiveness (71111.12)

- Maintenance Rule Unavailability and Unreliability Data for SBLC System Covering September 2010 to September 2012
- Calculation, DRE01-0066, Revision 2A, Dresden Unit 2&3 Standby Liquid Control System Discharge Piping Pressure Drop
- DOS 1100-03, Revision 41, Standby Liquid Control Injection Test
- IR 1280219, "Unit 2 SBLC Tank Bottom Weld Condition"
- IR 1282544, "No Flow To Reactor During DOS 1100-03, SBLC Injection Test"
- IR 1283680, "Non Destructive Evaluation Dye Penetrant Test Detected Linear Indication on the 2-1103 SBLC Tank"
- IR 1287449, "U2 SBLC Tank Thermowell for TS 2-1155 Leaking After Repair"
- IR 1305011, "U2 SBLC Squib Valves and Heat Trace"
- IR 1305997, "3B SBLC Squib Valve Replacement"
- IR 1337933, "NRC Concern: 3B SBLC Squib Valve Temperature"
- IR 1338917, "SBLC Heat Tracing Line Not Properly Installed After Maintenance"
- IR 1371557, "Maintenance Rule Function Z11-1 At Risk"
- IR 1377144, "2A SBLC Pump Discharge Relief Valve Failed As-Found Post Test"
- WC-AA-101, "On-Line Work Control Process," Revision 19
- IR 1151473, "2/3-5703-518, Rx Bldg dP Indicator (East Wall)"
- IR 1151474, "2/3-5703-517, Rx Bldg dP Indicator (North Wall)"
- IR 1151475, "2/3-5703-519, Rx Bldg dP Indicator (South Wall)"
- IR 1421952, "NRC Identifies Discrepancies Maintenance Rule for SGBT"

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

- IR 1386885, "Group V Isolation During DIS 1300-07"
- IR 1388948, "2A CWP Lower Bowl Leak Has Degraded Significantly"
- IR 0240470, "2B Circ Water Pump Suction Boot Leakage"
- EC 350802-02 "Circ Water Pump Suction Flange Repair"
- Drawing M-10, General Arrangement Crib House
- IR 1387283, "NRC SRI Identifies Improper Cone Used for 2/3 DFP PPW"
- IR 1400043, "NRC Concern with PPW Stanchions"

1R15 Operability Determinations and Functional Assessments (71111.15)

- IR 1340689, "NOS ID – Op Eval 12-003 Issues To Support Operability"
- IR 1326135, "Potential Vulnerability SWYD Single Open Phase Detection"
- EC 388709, "Evaluation of MOV 3-1501-3A Overthrust Condition"
- ER-AA-302-1006, "Generic Letter 96-05 Program Motor-Operated Valve Maintenance and Testing Guidelines," Revision 11
- Operability Evaluation 12-007, "Reactor Water Cleanup Auto Isolation System"
- IR 1386987, "NRC Event Notification"
- DIS 1300-07, "Unit 3 Isolation Condenser Steam/Condensate Line High Flow Calibration," Revision 24
- Drawing 12E-3506, Sheets 1-3, Schematic Diagram Primary Containment Isol. System Isol. Condenser Control Logic"
- IR 1384310, "2 EDG Cooling Water Pump Failure is an MSPI & MR Failure"

- IR 1384321, "Unit 2 DGCWP Failure Impacts MR & SSPI Indicators"
- IR 1397923, "Unit 2 DGCWP Failure Needs to Have an EACE Assigned"
- DES 6600-08, "Diesel Generator Electrical Maintenance Surveillance Inspection," Revision 25

1R18 Plant Modifications (71111.18)

- EC 388351, "Temporary Nitrogen Inerting Gas Supply"
- EC 387722, "Install New Heating Boilers (1A/1B) – Demolition Phase"
- EC 388360, "Temporary CO2 Generator Purge Gas Supply"
- Drawing M-197 Sheet 18, Partial Composite Site Plan at North Side Area Natural Gas Line for Heating Boiler
- Drawing M-197 Sheet 19, Plant Roads Plan at West Side Area Natural Gas Line for Heating Boiler

1R19 Post-Maintenance Testing (71111.19)

- WO 01408208, "U1 DFP Common Discharge Header Leak Test"
- DFPS 4123-01, "Unit 1 Diesel Fire Pump Operability," Revision 46
- DMS 4100-03, "Unit 1 Diesel Driven Fire Pump Surveillance and Preventative Maintenance," Revision 15
- IR 1395798, "U1 DFP Relief Valve does not Seat"
- IR 1397010, "Large Leak Through Fitting on Relief Valve"
- IR 1397003, "NRC Questions PMT Requirements for U1 DFP"
- IR 1399190, "U1 DFP Coolant Spill"
- WO 1303720-02, "D3 4Y TS 3B ISI CS Pump Motor Surv"
- WO 1365474-04, "D3 2Y EQ 3B CS Pump Motor EQ Surv"
- IR 1403227 "As found Resistance Higher Than Expected"
- DOS 1400-05, "Core Spray System Pump Operability and Quarterly IST Test with Torus Available," Revision 44
- IR 1405069, "903-4 E-6, 3A/B Recirc PPS Speed Mismatch"
- IR 1403144, "3A Reactor Recirculation Speed Changer Chronic Issue"
- IR 1405678, "Entered TS LCO 3.4.1 During DOP 0202-12 Scoop Tube Reset"
- Drawing M-14 Sheet 1, Diagram of Reactor Feed Piping
- IR 1407248, "U2 Drywell Entry Identified Leakage From 2-220-58B:"
- IR 1408227, "Pressure Seal Bore Found Damaged"

1R20 Outage Activities (71111.20)

- IR 1406808, "Possible Condenser Tube Leak – DOA 0010-21 Entry"
- IR 1407248, "U2 DW Entry Identified Leakage from 2-0220-58B"
- IR 1407069, "APRM 1 not Reading Correctly on Recorder"
- IR 1407074, "IRM 12 Not Reading Correctly on Recorder"
- IR 1407149, "2D3 Extraction Bypass Valve did not Operate Properly"
- IR 1407175, "Drywell Lighting Breaker Tripped while Turing On"
- IR1407181, "2/3-3099-58A MOV Packing Leak Identified During U2 LPHB Wlkd"
- IR 1407191, "Received 902-7 B5 Turbine Control Minor Trouble"
- IR 1407338, "SRM 22 Drive Motor Fuses Blown"
- IR 1407347, "Channel 18 on TR 2-5741-19 Indicates Wrong Temperature"
- IR 1408310, "Spurious U2 Main Generator Trip"
- IR 1408346, "Diaphragm Found Detached"

- IR 1408482, "U2 Gen CEH 'Loss of Field' Relay Discrepancy Noted"
- IR 1408507, "MSIV Closure Times Outside "Desired" Band"

1R22 Surveillance Testing (71111.22)

- DOS 1100-04, "Standby Liquid Control System Quarterly/Comprehensive Pump Test for the Inservice Testing (IST) Program," Revision 46
- UFSAR 9.3.5, "Standby Liquid Control System"
- EC 333923, "SBLC Pump and Relief Valve Modification"
- DRE01-0066, "Dresden Unit 2&3 Standby Liquid Control System Discharge Piping Pressure Drop," Revision 02
- MA-DR-771-403, Unit 3 – 4KV Tech Spec Under Voltage and Degraded Voltage Relay Routines
- Drawing 12E-3345, Schematic Diagram 4160V Bus 33-1 Under Voltage Relays Control Switch Development
- Drawing 12E-3650B, Wiring Diagram 4KV Bus 33-1 2nd Level Under Voltage Panel 2253-83
- IR 1388581, "33-1 Degraded Volt Relay OOT"
- IR 1388597, "33-1 Degraded Volt Relay OOT"
- IR 1388601, "33-1 Degraded TDR OOT – Adjusted"
- DFPS 4123-07, "Unit 1 Fire Pump Capacity Test," Revision 45
- IR 1395967, "Enhancements to Sequencing in DFPS 4123-07"
- IR 1395798, "U1 DFP Relief Valve does not Seat"
- IR 1398213, "U1 DFP Failed Annual Capacity Surveillance Test"
- IR 1397822, "U1 DFP Inoperable >TRM 3.7.I.A.1 Completion allowance"
- IR 1397988, "Puff of Smoke Observed From D1 DFP Turbocharger"
- IR 1398021, "Copper Tubing on New D1 DFP Discharge RV Cracked During Run"
- IR 1397947, "Security-Enhancements for Diesel Fire Pump Run"
- WO 1556391, "D2 1M TS Unit Diesel Generator Operability"
- DOS 6600-01, "Diesel Generator Surveillance Tests," Revision 120
- IR 1386875, "Elevated U2 EDG Jacket Cooling Water Temp Identified"

2RS5 Radiation Monitoring Instrumentation (71124.05)

- IR-01395458; Compilation of NRC Observations; July 27, 2012
- IR-01398192; Document Request of the Licensee's Process Monitor Setpoint Bases; August 7, 2012
- IR-01393615; NRC Requested 2/3 Main Chimney Flow Instrument Calibration and Functional Test; July 26, 2012
- IR-01392781; NRC Observation for Shepherd Calibration; July 24, 2012
- IR-01391081; Unstable Background Levels on RCA Exit Monitors; July 12, 2012
- IR-01392795; 2/3 Offgas Filter Building CAM was Found Oscillating; July 24, 2012
- IR-01392741; HPGE Detector Failed Multiple Performance Checks; July 27, 2012
- IR-01392819; Out of Calibration RP Instrument Found in Plant; July 25, 2012
- IR-01392532; IPM-9 at Unit-3 589' is Out-of-Service due to Faulty Power Supply; July 24, 2012
- Dresden Nuclear Power Station ODCM; Revision 12; Dated March 2012
- DRE-11-002; Verification of EP Release Detection Requirement for Unit 2/3 Chimney SPING Noble Gas Monitor; Revision 0
- EP-EAL-0604; Criteria for Choosing Radiological Gaseous Effluent EAL Threshold Values Dresden Nuclear Power Station; October 4, 2010
- RP-AA-230; Operation of Canberra Fastscan Whole Body Counter; Revision 0a

- 85047-121; Eckert & Ziegler Certification of Calibration; July 1, 2011
- Canberra Training and Technical Services; Calibration of the Canberra Fastscan No. 1 WBC System for Dresden Nuclear Power Station; August 18, 2011
- D2/3 PM Chimney Flow Element Blowdown; July 14, 2012
- DIS 5700-03; Unit 2/3 Chimney Flow Monitor Calibration and Functional Test; Revision 14
- CY-AA-130-205-F-02; Alpha and Beta Smear Filters Efficiency; Radiochemistry Method Development; Revision 1; February 20, 2012
- CY-AA-130-201-F-01; Instrument Calibration and Performance Check Quality Control Schedule on Proportional Counter XLB-2; February 3, 2012
- Chimney Iodine Effluent LLD Determination; Bi-Annual LLD on HPGe Detectors; June 7, 2012
- CY-AA-130-300; Bi-Annual LLD Counts for Effluent Geometry
- Teledyne Brown Engineering; Report of Analysis/Certificate of Conformance; May 18, 2012
- Results of Radiochemistry Cross-Check Program; from First Quarter 2011 through First Quarter 2012
- Tri-Carb 2900 TR DG0861286; Instrument Calibration and Performance Check Quality Control Schedule; July 17, 2012
- RP-DR-772; Operation of Delta-5 Rate Meter; Revision 1
- RP-DR-7007; Surveillance Requirements for ARMs That Are Inoperable or Out-of-Service; Revision 2
- RP-AA-800-001; National Tracked Source Program; Revision 0
- Exelon PowerLabs, Inc.; Certification of Calibration; Radiation Detection Devices
- RP-AA-700-1401; Operation and Calibration of Eberline Model PM-7 Personnel Contamination Monitor; Revision 1
- RP-AA-700-1235; Operation and Calibration of the PM-12 Gamma Portal Monitor; Revision 0a
- RP-AA-700-1210; Operation and Calibration of IPM Whole Body Frisking Monitor; Revision 0a

40A1 Performance Indicator Verification (71151)

- IR 1223831, "Troubleshooting Results for the IC 2-1301-1 Valve"
- IR 1237950, "2/3 B ISCO Make Up Pump Exceeded 75 percent MR Unavailability"
- IR 1255743, "U2 East Iso Condenser End Bell Leak"
- IR 1258103, "Unexpected Iso Condenser High Temperature Alarm"
- IR 1277894, "MOV 2-1301-1 Magnesium Rotor Degraded"
- IR 1371818, "Unit 3 ISO Condenser 3-1301-3 Reseated Due to Rising Temps"
- Reactor Oversight Program MSPI Bases Document Dresden Nuclear Generating Station, Revision 8
- IR 1229309, "2A LPCI Pump Historical Operability Evaluation Results"
- IR 1235623, "Suction Valves Left Isolated"
- IR 1322403, "LPCI SSPI Unavailability Incurred Exceeds Estimate"
- IR 1343740, "Unexpected Alarm – LPCI Pump Trip"
- Operating Logs June 2011 – May 2012
- IR 1228403, "IR 1217178 Is a Maintenance Rule Functional Failure"
- IR 1291381, "Overhaul of 3C CCSW Pump Recommended"
- LS-AA-2150; Monthly Data Elements for NRC RETS/ODCM Radiological Effluent Occurrences; Revision 5; Dated January 2011 through March 2012
- Dresden Nuclear Power Station's 2011 Annual Radioactive Effluent Release Report; Docket 50-010/50-237/50-249

40A2 Identification and Resolution of Problems (71152)

- Operability Evaluation 11-005 Rev 3, Seismic Effects on BWR Control Rod Scram at Low Reactor Pressures
- OP-AA-102-103, Operator Work-Around Program
- Operator Burden/ Degraded Equipment Aggregate Assessment 1st Quarter 2012
- IR 1369775, "Conflict of Procedures"
- IR 1383557, "NRC Questioned The DOA 0010-18 and DSSP 0100-CR Flow Path"
- DOA 0010-18, "Escalated Security Event/Hostile Force Intrusion," Revision 30
- DSSP-0010-01, "Determining Safe Shutdown Paths For Extensive Plant Damage," Revision 10

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

- OP-AA-112-101, "Shift Turnover and Relief," Revision 8
- Apparent Cause Evaluation (IR 1328879-03), "Disregarded APRM [Average Power Range Monitor] AGAF [APRM Gain Adjustment Factor] Alarm
- Apparent Cause Evaluation (IR 1282544-05), "SBLC [standby liquid control] Squib Valve Failure"
- IR 1386885, "Group V Isolation During DIS 1300-07"
- IR 1386898, "Reactor Protection System Test Switch Failure During D3 DIS 1300-07"
- EACE 1386898-03, "Logic Test Switch Failure During Unit 3 DIS 1300-07 Isolation Condenser Steam/Condensate Line High Flow Calibration"
- NO-AA-10, Revision 86, Quality Assurance Topical Report
- IR 1369302, "Steam Leak Found on HPCI ASME Code Class Piping"
- IR 1369305, "Unit 2 HPCI Inlet Drain Pot Leak"
- IR 1376323, "Steam Leak Found on HPCI ASME Code Class Piping"
- Prompt Investigation, 1376323-02, "Prompt – Steam Leak Found on Unit 3 HPCI ASME Code Class Piping"
- WO154858569-01, "Repair of the U3 Inlet Drain Pot 3A Drain to Main Condenser Air Operated Valve Line"

40A5 Other Activities

- IR 1114443, "Unit 2 LPCI Corner Room Ceiling Penetrations Not Sealed."
- IR 1108059, "NRC Identified Concern"
- NFPA 90A, "Air Conditioning and Ventilation Systems," 1976
- Focused Area Self Assessment - AR 1336591, "Control Room Envelope Habitability Program Assessment"
- 72.48 Screenings 443, 445, 462, and 465
- IR 01231818; NER NC-11-024-Y Fleet Wide Actions; May 26, 2011
- IR 01251532; Dresden Review of Cask Rocking Potential Identified in Braidwood IR 1245756; July 29, 2011
- IR 01266469; Structural Adequacy of Dresden LPT; June 22, 2011
- IR 01268258; Dry Cask Stability / Structural Evaluation; May, 26, 2011
- IR 01282679; NRC Insight on Calculation Issues Supporting ISFSI Campaign; October 28, 2011
- IR 01293137; Review of Lift Yoke Analysis per ATI 1282679-02; November 21, 2011
- IR 01327578; HI-TRAC Lift Yoke De-rated to 110-Ton Maximum Capacity; December 20, 2011
- IR 01382122; NRC Request for Information Relating to Heavy Load Lifts in RB; June 26, 2012

- IR 01382133; Fuel Bundle LJ8580 with Historically Damaged Channel; June 26, 2012
- IR 01382927; NRC Request for Info: RE Dry cask Storage IRS and Analyses; July 28, 2012
- DFP 0800-69; HI-TRAC Movement within the Unit 2/3 Reactor Building; Revision 21
- DFP 0800-70; HI-TRAC Loading Operations; Revision 25
- DFP 0800-71; MPC Processing; Revision 27
- DFP 0800-75; MPC Inspection; Revision 04
- DMP 5800-18; Load Handling of Heavy Loads and Lifting Devices; Revision 21
- DOA 0800-01; Spent Fuel Cask Abnormal Conditions; Revision 03
- DRE11-0064; Fuel Selection Package for MPC-68-357; Revision 0
- DRE11-0065; Fuel Selection Package for MPC-68-356; Revision 0
- DRE11-0066; Fuel Selection Package for MPC-68-355; Revision 0
- Dresden Station Spent Fuel Loading Campaign Readiness Check in Assessment; February 27, 2012
- DRP 0800-32; Fuel Movements within the Spent Fuel Pools; Revision 27
- EC 386569; Dry Cask Low Profile Transporter Structural Analysis; Revision 000
- EC 386651; Dry Cask Stability and Structural Support Analysis; Revision 001
- EC 387173; Dry Cask Lift Yoke and Lift Bracket Structural Analysis; Revision 000
- NOSA-DRE-10-11; ISFSI Audit; October 15, 2010
- PI-CNSTR-T-OP-220; Closure Welding of Holtec Multi-Purpose Canisters at Exelon Facilities; Revision 3
- WO 01351514; D2-3 Annual OSHA Inspection Crane – Reactor Building Overhead; June 16, 2011
- WO 01412162; D2/3 Annual ISFSI Test of U2/3 RB 125 Ton Lift Yoke; January 9, 2012
Radiation Work Permit (RWP) #10013670, “Unit 3 Dry Well at Power Entry for 3A RR motor oil level on lower reservoir,” dated 9/19/2012
- RP-AA-401-1002, Attachment 1; Radiological Risk Assessment Worksheet; Revision 2
- RP-AA-401; Electronic Equivalent; Revision 14
- DWG 3DW515GA, file # 7-15; “Unit 3 Drywell Elevation 515’, General Area”
- SA-DR-114-1101; Drywell Confined Space Plan; Revision 4
- DOP 1600-22; Drywell Entry (Initial, Closeout, or at Power); Revision 23
- Flooding Walkdown Package Dresden Nuclear Power Station; Revision 1
- DOA 0010-04; Floods; Revision 32
- Operability Evaluation 12-009; Flooding Affects on the Interim Radioactive Waste Storage Facility(IRSF); Revision 0
- DRE01-0030; Evaluation of the Effects of a Probable Maximum Flood on the Holtec International HI-STORM Spent Fuel Storage Cask Heat Removal System; Revision 0
- IR 1392047; IRSF Is Vulnerable to Probable Maximum Flood; July 23, 2012
- IR 1393491; NRC Question Regarding Flood Affects on ISFSI (Dry Fuel); July 26, 2012
- IR 1393890; Change to Flood Procedure Not Consistent with Key Assumption; July 30, 2012
- IR 1400926; Review of IRs 01393602 and 01393491 – ISFSI Flooding, August 15, 2012
- Dresden Unit’s 2 and 3 Seismic Walkdown Equipment Lists (SWEL)
- Seismic Walkdown Checklists and Area Walk by Checklists
- EPRI 1025286; Seismic Walkdown Guidance For Resolution of Fukushima Near Term Task Force Recommendation 2.3: Seismic; June 2012
- IR 1394946; Fukushima – Panel 3A 48/24 VDC With Doors That Do Not Latch; July 30, 2012
- IR 1395804; Fukushima – Support Deficiency For Equipment 3-0302-20B; August 1, 2012
- IR 1396014; Fukushima – Light Fixture Connection Deficiency; August 1, 2012
- IR1396558; Fukushima – Conduit Support Anomaly; August 2, 2012

- IR 1396562; Fukushima – Unpinned Switchgear Hoists; August 2, 2012
- IR 1396565; Fukushima – Anchor Plate Missing Nut; August 2, 2012
- IR 1396568; Fukushima – Spent Fuel Pool Pipe Support Missing Anchor Plate; August 2, 2012

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
APRM	Average Power Range Monitor
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
DRP	Division of Reactor Projects
DNMS	Division of Nuclear Materials Safety
DRP	Division of Reactor Projects
DW	Drywell
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
HPCI	High Pressure Coolant Injection
HPGE	High Purity Germanium
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
ISFSI	Independent Spent Fuel Storage Installation
ISI	Inservice Inspection
JPM	Job performance Measure
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LLC	Limited Liability Corporation
LORT	Licensed Operator Requalification Training
LPCI	Low Pressure Coolant Injection
MCID	Materials Control, ISFSI and Decommissioning
MOV	Motor-Operated Valve
MPC	Multi-Purpose Canister
MSIV	Main Steam Isolation Valve
MSL	Mean Sea Level
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
OOS	Out of Service
OWA	Operator Workarounds
PARS	Publicly Available Records System
PI	Performance Indicator
PM	Planned or Preventative Maintenance
PMT	Post-Maintenance Testing
RBCCW	Reactor Building Closed Cooling Water
RCA	Radiologically Controlled Area
RP	Radiation Protection

SBLC	Standby Liquid Control
SBO	Station Blackout
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SSC	Systems, Structures, and Components
SW	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WBC	Whole Body Count
WO	Work Order

M. Pacilio

-2-

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Sincerely,

/RA/

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

Docket Nos. 50-237; 50-249; and 72-037
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Letter to M. Pacilio from J. Cameron dated October 19, 2012.

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3, INTEGRATED
INSPECTION REPORT 05000237/2012004, 05000249/2012004, AND
07200037/2012001

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