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

April 27, 2015

Mr. Bryan Hanson
Senior Vice President, Exelon Generation Co., LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 INTEGRATED INSPECTION REPORT 05000237/2015001; 05000249/2015001

Dear Mr. Hanson:

On March 31, 2015, 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 April 8, 2015, with Mr. S. Marik, and other members of your staff.

Based on the results of this inspection, one self-revealed finding of very-low safety significance (Green) was identified. The finding was determined to involve a violation of NRC requirements. However, because of its very-low safety significance, and because the issue was entered into your Corrective Action Program, the NRC is treating the issue as a Non-Cited Violation (NCV), in accordance with Section 2.3.2 of the NRC's 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. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Dresden Nuclear Power Station.

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

Sincerely,

/RA/

Jamnes Cameron, Chief
Branch 4
Division of Reactor Projects

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

Enclosure:
IR 05000237/2015001; 05000249/2015001
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	05000237; 05000249
License Nos:	DPR–19; DPR–25
Report No:	05000237/2015001; 05000249/2015001
Licensee:	Exelon Generation Company, LLC
Facility:	Dresden Nuclear Power Station, Units 2 and 3
Location:	Morris, IL
Dates:	January 1 through March 31, 2015
Inspectors:	G. Roach, Senior Resident Inspector D. Lords, Acting Senior Resident Inspector M. Ziolkowski, Acting Resident Inspector R. Elliott, Jr., Reactor Engineer T. Go, Health Physicist M. Porfirio, Resident Inspector, Illinois Emergency Management Agency
Observer:	G. Edwards, Health Physicist
Approved by:	J. Cameron, Chief Projects Branch 4 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000237/2015001, 05000249/2015001; 01/01/2015 – 03/31/2015; Dresden Nuclear Power Station, Units 2 & 3; In-Plant Airborne Radioactivity Control and Mitigation.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was self-revealed. The finding was considered a non-cited violation (NCV) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" effective date December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, "Reactor Oversight Process" Revision 5, dated February 2014.

Cornerstone: Occupational Radiation Safety

Green. A finding of very-low safety significance, and an associated NCV of 10 CFR 20.1701 was self-revealed during work activities associated with the failure to effectively implement planned radiological engineering controls during reactor head reassembly that resulted in personal contaminations and unintended radiological intakes to workers. On November 14, 2014, during the cleaning of the reactor head studs, several workers on the refuel floor were contaminated, and received unplanned and unintended intakes of radioactive material. Corrective actions included revising applicable procedures to improve the engineering and contamination controls during reactor head reassembly.

The inspectors determined that that the finding was more than minor in accordance with IMC 0612, in that the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone, and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, the failure to implement effective radiological engineering and contamination controls during the cleaning of the contaminated reactor head studs resulted in personal contaminations and intakes to several workers. The inspectors concluded that the radiological hazards had the potential to result in higher exposures to the individuals had the circumstances been slightly altered. The finding was determined to be of very-low safety significance in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," because it was not an as low as reasonably-achievable planning issue, there was neither overexposure nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The inspectors concluded that the cause of the issue involved a cross-cutting component in the human performance in that the licensee's management did not ensures that effective radiological engineering controls was either managed or coordinated commensurate to the work activities. [H.5] (Section 2RS3)

Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 2

Unit 2 began the inspection period at full power. On January 13, 2015, operators inserted a manual scram due to failure of the feed water level control system (FWLCS), causing a forced outage D2F55 to repair the FWLCS. Operators returned the unit to full power on January 17. On February 6, 2015, an automatic scram occurred during troubleshooting on the FWLCS, entering the unit into forced outage D2F56. Operators returned the unit to full power on February 13. With the exception of short periods for routine maintenance and surveillances, Unit 2 operated at or near full power for the remainder of the inspection period.

Unit 3

Unit 3 began the inspection period at full power. On January 9, 2015, reactor chemistry sampling confirmed that a small fuel failure existed in the core. On January 17 operators reduced power to 82 percent to conduct testing as part of fuel failure identification and verification efforts, and returned to full power on January 18. On January 29, 2015, operators lowered power to 50 percent to conduct power suppression testing and identify the core location of the failed fuel. The failed fuel was identified and mitigated, and Unit 3 returned to full power on February 3. On February 28, 2015, the operators reduced power to 58 percent to conduct control rod sequence exchange, and full power was restored on the same day. With the exception of short periods for routine maintenance and surveillances, Unit 3 operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition—Extreme Cold Conditions

a. Inspection Scope

Since extreme cold conditions were forecast in the vicinity of the facility for January 7, 2015, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On January 7, 2015, the inspectors walked down the Unit 3 125 volts direct current (VDC) alternate battery area, the Unit 2 isolation condenser, and the Unit 2 stator water cooling systems because their safety-related functions could be affected or required as a result of the extreme cold conditions forecast for the facility. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for

safe plant operation and emergency response would be available. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in 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, Division 1 low pressure coolant injection (LPCI) /containment cooling service water (CCSW);
- 3B control rod drive (CRD) pump and train; and
- 3B 125 VDC system.

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, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04–05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On March 26, 2014, the inspectors performed a complete system alignment inspection of the Unit 3 high pressure coolant injection (HPCI) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment 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 14.2B,C and FZ 14.3B,C; off-gas re-combiner, elevations 571' and 590';
- fire protection contingency actions during repair of 2–4101–C–500 valve;
- Fire Zone 1.1.1.2, Unit 3 reactor ground floor, elevation 517;'
- Fire Zone 8.2.1A, Unit 2 condensate pumps, elevation 469'; and
- Fire Zone 7.0 B, Unit 3 250 VDC battery room, elevation 551'.

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.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On January 26, 2015, and again on March 16, 2015, the inspectors observed 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 During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On January 13, 2015, the inspectors observed Unit 2 operator response following the loss of feedwater level control circuit and a subsequent manual reactor scram. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

The inspectors evaluated degraded performance issues of risk-significant systems by reviewing the following:

- main control room (MCR) recorders/MCR deficiencies; and
- review of bi-annual 10 CFR 50.65(a)(3) assessment for the period 10/1/12 – 9/30/14.

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

- implementing appropriate work practices;
- identifying and addressing common cause failures;

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

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

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

No findings 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 2 Division II low pressure coolant injection/containment cooling service water (LPCI/CCSW) Yellow risk system work window;
- Unit 2 switchyard Bus 7 protective circuit cable repair;
- Unit 2 Division 1 LPCI/CCSW work window;
- Unit 2 isolation condenser planned Yellow risk window;
- Unit 2 high pressure coolant injection limiting condition for operations(LCO) window 3/15 – 3/20; and
- 3B turbine building closed cooling water pump planned Yellow risk.

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.

Documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted six 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:

- unauthorized jumper installed between 2A containment coolant service water control circuit and low pressure coolant injection Loop I flow indicator;
- 2B drywell high radiation monitor failure;
- Unit 3 1A main steam isolation valve-closed reactor protection system relay failed to actuate;
- Part 21–GE SC 14–19 (failure of SBM type switch); and
- 2B & 2D main steam isolation valves in need of timing.

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

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification(s):

- Unit 2 electromatic relief valve (ERV) hardened actuator installation (Engineering Change 394705)

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 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:

- 2/3 emergency diesel generator following work window;
- 2D containment coolant service water inservice testing and low pressure coolant injection suction valve post-maintenance testing (PMT);
- Unit 3 emergency diesel generator (EDG) following work window;
- Unit 2 reactor water clean-up system pressure controller replacement; and
- Unit 2 emergency relief valves during D2F56.

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

returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted five post-maintenance 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 outage (D2F55) that began on January 13, 2015, and continued through the January 17, 2015. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed or reviewed the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, personnel fatigue management, startup and heatup activities, and identification and resolution of problems associated with the outage. The forced outage was caused by a spurious power interruption on a historically improperly landed power supply ribbon cable which resulted in a transient in the feedwater level control system.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Other Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities for a forced outage (D2F56) that began on February 6, 2015, and continued through the February 13, 2015. The inspectors

reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed or reviewed the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, personnel fatigue management, startup and heatup activities, and identification and resolution of problems associated with the outage. The forced outage was again caused by a spurious power interruption on a historically improperly landed power supply ribbon cable which resulted in a transient in the feedwater level control system. An additional cause for the scram was less than rigorous challenging of troubleshooting performed after the scram which occurred on February 6, 2015.

Documents reviewed are listed in the Attachment to this report.

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:

- Unit 2 main steam isolation valve (MSIV) closure timing inservice test (IST);
- Unit 3 core spray valve timing (Routine);
- Unit 3 3B off gas hydrogen analyzer functional test (Routine);
- DIS 0250–01, “U3 IM TS Quarterly Main Steam High Flow Switch Calibration” (WO 1789722–01, “D3 QTR TS Main Steam Line High Flow Isolation”) (Routine); and
- DOP 2000–180, “Drywell Sump operation with Unit On-Line,” (WO 1812763–01, “TS/Repair 3–2001–6 Valve Failed Closed During Normal Pumping”) reactor coolant system (RCS).

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 were 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 for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples, one inservice testing sample, and one reactor coolant system leak detection inspection sample, as defined in IP 71111.22, Sections–02 and–05.

b. Findings

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 February 5, 2015, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center and Simulator 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 71114.06–06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

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

The inspection activities supplement those documented in IR 05000237(249)/2014002, and constitute one complete sample as defined in IP 71124.03–05.

.2 Engineering Controls (02.02)

a. Inspection Scope

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

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

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

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluated whether the alarms and setpoints were sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of Title 10, CFR Part 20, and the ALARA concept.

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

b. Findings

Introduction: The inspectors reviewed a self-revealed finding of very-low safety significance (Green) and an associated NCV of 10 CFR 20.1701 during re-assembly of the reactor head activities that involved the cleaning of the reactor head studs. Specifically, engineering controls that were intended to be implemented were not utilized during cleaning of the head studs; thereby creating unexpectedly elevated airborne radiological conditions on the refuel floor. This resulted in the contamination of ten workers, and these individuals received unplanned and unintended internal radiological exposures. The inspectors concluded that the licensee failed to implement planned engineering controls in accordance with 10 CFR 20.1701 to minimize workers' radiological exposures.

Description: On November 14, 2014, Dresden Unit 3 plant was in refueling outage number 23 (D3R23). During reassembly of the reactor head, plant workers cleaned the reactor head studs in the reactor cavity. The cleaning involved a rigorous brushing process of the studs with specially designed mechanical brushes. During this activity elevated airborne contaminants alarmed the continuous air monitor (CAM); the CAM was located on the refuel floor adjacent to the cavity. After the CAM alarmed, the licensee evacuated all personnel and secured personnel access to the refuel floor. Refuel floor personnel then passed through the licensee's contamination monitors and ten individuals were identified as contaminated. In-vivo bioassay testing indicated that these individuals received low level intakes of radioactive material (less than 10 mrem).

Following this event, the licensee performed an apparent cause investigation (ACE 2411760) "D3R23 Work Stopped on Refuel Floor after CAM Alarmed" to determine the cause of this event. During this investigation, the licensee determined that the cause of the airborne condition was the reactor stud cleaner, which is a very abrasive process. The licensee also concluded during this investigation that engineering controls such as using local HEPA ventilation and live time monitoring controls such as remote radiation monitoring and surveys on the stud cleaner were not adequate to prevent this contamination event. Workers performing the stud cleaning in the reactor cavity were not contaminated because these workers donned layers of protective clothing, and Versa hood, a powered air purifying respirator (PAPR). However, workers outside of the cavity on the refuel floor were not required to don PAPR equipment, and were consequently contaminated from the stud cleaning activity.

Inspectors determined that during the reactor head studs cleaning using the specially designed mechanical brushes, the licensee failed to anticipate the elevated airborne contamination through adequate engineering and contamination controls. The inspectors also noted that the licensee had two high-efficiency particulate air (HEPA) filter units staged on the refuel floor and only one unit was in service. There were extensive industry operating experiences available to the licensee since the early 1990's that identified inadequate engineering controls during reactor stud cleanings that resulted in elevated refuel floor radioactive airborne concentrations.

As corrective actions, the licensee will improve or revise applicable procedures for reactor reassembly and the head stud cleaning process, specifically by instituting radiological engineering and contamination controls to create a treated pathway for airborne contamination discharges.

Analysis: The inspectors determined that this issue of concern was a performance deficiency. Specifically, engineering controls on the refuel floor were intended to be implemented, but that were not utilized during cleaning of the reactor studs. This resulted in ten workers receiving unplanned or unintended internal radiological exposures. The inspectors determined that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct, and should have been prevented.

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

The inspectors also determined that that the finding was more than minor in accordance with IMC 0612, in that the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone, and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, the failure to use engineering controls resulted in unplanned and unintended intakes of radioactive material to several personnel on the refuel floor during the reactor head reassembly. The inspectors also concluded that the radiological hazards present had the potential to result in higher exposures to these refuel floor workers had the circumstances been slightly altered. The inspectors also reviewed the guidance in IMC 0612, Appendix E, "Examples of Minor Issues," and did not identify any examples similar to the performance issue. The finding was assessed using IMC 0609, Appendix C, and Occupational Radiation Safety Significance Determination Process (SDP), and was determined to be of very-low safety significance because it was not an ALARA planning issue, there was neither overexposure nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised.

The licensee's evaluation of this issue determined that there were ample experiences available with the refuel floor engineering controls; therefore, the planning, controlling and executing of engineering control the work activities in the refueling cavity were not the overriding priority. Consequently, the inspectors concluded that the cause of the issue involved a cross-cutting aspect in the human performance area, in that the licensee's management did not ensure that the work process in the refuel floor cavity was managed or coordinated commensurate to the work actives. [H.5]

Enforcement: 10 CFR 20.1701 states, in part, that the licensee shall use, to the extent practical, process or other engineering controls to control the concentration of radioactive material in air. Contrary to the above, on November 14, 2014, the licensee failed to implement engineering controls, and created unexpected increases in airborne radiological contamination levels on the refuel floor from activities performed in the refueling floor cavity. This resulted in ten personal contaminations, and these individuals received unplanned or unintended internal radiological exposures. Since the failure to adequately implement engineering controls was of very-low safety significance, corrective actions were established as described above, and the issue was entered into the licensee's CAP as IR 2411760, the violation is being treated as a NCV consistent

with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000237/2015001–01; 05000249/2015001–01: "10 CFR 20.1701; Failure to Implement Effective Radiological Engineering Controls")**

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

This inspection constituted one complete sample as defined in IP 71124.06–05.

.1 Inspection Planning and Program Reviews (02.01)

Event Report and Effluent Report Reviews

a. Inspection Scope

The inspectors reviewed the Radiological Effluent Release Reports issued since the last inspection to determine if the reports were submitted as required by the Offsite Dose Calculation Manual (ODCM)/TSs. The inspectors reviewed anomalous results, unexpected trends, or abnormal releases identified by the licensee for further inspection to determine if they were evaluated, were entered in the CAP, and were adequately resolved.

The inspectors selected radioactive effluent monitor operability issues reported by the licensee as provided in effluent release reports, to review these issues during the onsite inspection, as warranted, given their relative significance, and determine if the issues were entered into the CAP and adequately resolved.

b. Findings

No findings were identified.

Offsite Dose Calculation Manual and Final Safety Analysis Report Review

a. Inspection Scope

The inspectors reviewed UFSAR descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths so they could be evaluated during inspection walkdowns.

The inspectors reviewed changes to the ODCM made by the licensee since the last inspection against the guidance in NUREG–1301, 1302 and 0133, and Regulatory Guides (RG) 1.109, 1.21 and 4.1. When differences were identified, the inspectors reviewed the technical basis or evaluations of the change during the onsite inspection to determine whether they were technically justified and maintain effluent releases ALARA.

The inspectors reviewed licensee documentation to determine if the licensee has identified any non-radioactive systems that have become contaminated as disclosed either through an event report or the ODCM since the last inspection. This review provided an intelligent sample list for the onsite inspection of any 10 CFR 50.59 evaluations and allowed a determination if any newly contaminated systems have an unmonitored effluent discharge path to the environment, whether any required ODCM revisions were made to incorporate these new pathways and whether the associated effluents were reported in accordance with RG 1.21.

b. Findings

No findings were identified.

Groundwater Protection Initiative Program

a. Inspection Scope

The inspectors reviewed reported groundwater monitoring results, and changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

b. Findings

No findings were identified.

Procedures, Special Reports, and Other Documents

a. Inspection Scope

The inspectors reviewed Licensee Event Reports (LERs), event reports and/or special reports related to the Effluent Program issued since the previous inspection to identify any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

The inspectors reviewed the Effluent Program implementing procedures, particularly those associated with effluent sampling, effluent monitor set-point determinations, and dose calculations.

The inspectors reviewed copies of licensee and third party (independent) evaluation reports of the Effluent Monitoring Program since the last inspection to gather insights into the licensee's program, and aid in selecting areas for inspection review (smart sampling).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down selected components of the gaseous and liquid discharge systems to evaluate whether equipment configuration and flow paths align with the documents reviewed in 02.01 above, and to assess equipment material condition. Special attention was made to identify potential unmonitored release points (such as open roof vents in boiling water reactor turbine decks, temporary structures butted against turbine, auxiliary or containment buildings), building alterations which could impact airborne, or liquid effluent controls, and ventilation system leakage that communicates directly with the environment.

For equipment or areas associated with the systems selected for review that were not readily accessible due to radiological conditions, the inspectors reviewed the licensee's material condition surveillance records, as applicable.

The inspectors walked down filtered ventilation systems to assess for conditions such as degraded high-efficiency particulate air /charcoal banks, improper alignment, or system installation issues that would impact the performance or the effluent monitoring capability of the effluent system.

As available, the inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent (including sample collection and analysis) to evaluate whether appropriate treatment equipment was used, and the processing activities align with discharge permits.

The inspectors determined if the licensee has made significant changes to their effluent release points (e.g., changes subject to a 10 CFR 50.59 review or require NRC approval of alternate discharge points).

As available, the inspectors observed selected portions of the routine processing and discharging of liquid waste (including sample collection and analysis) to determine if appropriate effluent treatment equipment is being used, and that radioactive liquid waste is being processed and discharged in accordance with procedure requirements and aligns with discharge permits.

b. Findings

No findings were identified.

.3 Sampling and Analyses (02.03)

a. Inspection Scope

The inspectors selected effluent sampling activities, consistent with smart sampling, and assessed whether adequate controls have been implemented to ensure representative samples were obtained (e.g., provisions for sample line flushing, vessel recirculation, composite samplers, etc.).

The inspectors selected effluent discharges made with inoperable (declared out of service) effluent radiation monitors to assess whether controls were in place to ensure compensatory sampling was performed consistent with the radiological effluent ODCM/TSs, and that those controls were adequate to prevent the release of unmonitored liquid and gaseous effluents.

The inspectors determined whether the facility was routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the Inter-Laboratory Comparison Program to evaluate the quality of the radioactive effluent sample analyses, and assessed whether the Inter-Laboratory Comparison Program includes hard-to-detect isotopes as appropriate.

b. Findings

No findings were identified.

.4 Instrumentation and Equipment (02.04)

Effluent Flow Measuring Instruments

a. Inspection Scope

The inspectors reviewed the methodology the licensee uses to determine the effluent stack and vent flow rates to determine if the flow rates were consistent with radiological effluent ODCM/TSs or UFSAR values, and those differences between assumed and actual stack, and vent flow rates did not affect the results of the projected public doses.

b. Findings

No findings were identified.

Air Cleaning Systems

a. Inspection Scope

The inspectors assessed whether surveillance test results since the previous inspection for TS required ventilation effluent discharge systems (high-efficiency particulate air and charcoal filtration), such as the Standby Gas Treatment System and the Containment/Auxiliary Building Ventilation System, met TS acceptance criteria.

b. Findings

No findings were identified.

.5 Dose Calculations (02.05)

a. Inspection Scope

The inspectors reviewed all significant changes in reported dose values compared to the previous Radiological Effluent Release Report (e.g., a factor of five, or increases that approach 10 CFR 50Appendix I criteria) to evaluate the factors which may have resulted in the change.

The inspectors reviewed radioactive liquid and gaseous waste discharge permits to assess whether the projected doses to members of the public were accurate and based on representative samples of the discharge path.

Inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides are included within detectability standards. The review included the current 10 CFR Part 61 analyses to ensure hard-to-detect radionuclides are included in the source term.

The inspectors reviewed changes in the licensee's offsite dose calculations since the last inspection to evaluate whether changes were consistent with the ODCM and RG 1.109. Inspectors reviewed meteorological dispersion and deposition factors used in

the ODCM and effluent dose calculations to evaluate whether appropriate factors were being used for public dose calculations.

The inspectors reviewed the latest Land Use Census to assess whether changes (e.g., significant increases or decreases to population in the plant environs, changes in critical exposure pathways, the location of nearest member of the public, or critical receptor, etc.) have been factored into the dose calculations.

For the releases reviewed above, the inspectors evaluated whether the calculated doses (monthly, quarterly, and annual dose) are within the 10 CFR 50 Appendix I, and TS dose criteria.

The inspectors reviewed, as available, records of any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc.) to ensure the abnormal discharge was monitored by the discharge point effluent monitor. Discharges made with inoperable effluent radiation monitors, or unmonitored leakages were reviewed to ensure that an evaluation was made of the discharge to satisfy 10 CFR 20.1501 so as to account for the source term, and projected doses to the public.

b. Findings

No findings were identified.

.6 Groundwater Protection Initiative Implementation (02.06)

a. Inspection Scope

The inspectors reviewed monitoring results of the Groundwater Protection Initiative to determine if the licensee had implemented its program as intended, and to identify any anomalous results. For anomalous results or missed samples, the inspectors assessed whether the licensee had identified and addressed deficiencies through its CAP.

The inspectors reviewed identified leakage, or spill events and entries made into 10 CFR 50.75 (g) records. The inspectors reviewed evaluations of leaks, or spills, and reviewed any remediation actions taken for effectiveness. The inspectors reviewed onsite contamination events involving contamination of ground water, and assessed whether the source of the leak, or spill, was identified and mitigated.

For unmonitored spills, leaks, or unexpected liquid or gaseous discharges, the inspectors assessed whether an evaluation was performed to determine the type and amount of radioactive material that was discharged by:

- Assessing whether sufficient radiological surveys were performed to evaluate the extent of the contamination and the radiological source term, and assessing whether a survey/evaluation had been performed to include consideration of hard-to-detect radionuclides; and

- Determining whether the licensee completed offsite notifications, as provided in its Groundwater Protection Initiative implementing procedures.

The inspectors reviewed the evaluation of discharges from onsite surface water bodies that contain or potentially contain radioactivity, and the potential for ground water

leakage from these onsite surface water bodies. The inspectors assessed whether the licensee was properly accounting for discharges from these surface water bodies as part of their effluent release reports.

The inspectors assessed whether on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year were documented in the Annual Radiological Environmental Operating Report for the Radiological Environmental Monitoring Program, or the Annual Radiological Effluent Release Report for the Radiological Effluent TS.

For significance, new effluent discharge points (such as significant or continuing leakage to ground water that continues to impact the environment if not remediated), the inspectors evaluated whether the ODCM was updated to include the new release point.

b. Findings

No findings were identified.

.7 Problem Identification and Resolution (02.07)

a. Inspection Scope

Inspectors assessed whether problems associated with the Effluent Monitoring and Control Program were being identified by the licensee at an appropriate threshold, and were properly addressed for resolution in the licensee CAP. In addition, they evaluated the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving radiation monitoring and exposure controls.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator (PI) (IE01) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the first quarter 2014 through fourth quarter 2014. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, event reports and NRC Integrated IRs for the period of January 2014 through December 2014 to validate the accuracy of the submittals. The inspectors also reviewed

the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned scrams per 7000 critical hours samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications performance indicator (IE04) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the first quarter 2014 through fourth quarter 2014. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated IRs for the period of January 2014 through December 2014 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned scrams with complications samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours performance indicator (IE03) for Dresden Nuclear Power Station Units 2 and 3 covering the period from the first quarter 2014 through fourth quarter 2014. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports and NRC Integrated IRs for the period of January 2014 through December 2014 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned transients per 7000 critical hours samples as defined in IP 71151–05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors sampled licensee submittals for the radiological effluent ODCM/TS radiological effluent occurrences Performance Indicator for the period from the first quarter 2014 through the fourth quarter 2014. The inspectors used Performance Indicator definitions and guidance contained in the NEI Document 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine the accuracy of the Performance Indicator data reported during those periods. The inspectors reviewed the licensee's issue report 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 Radiological Effluent TS/ODCM radiological effluent occurrences sample as defined in IP 71151–05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-Up Inspection: Unit 2 Emergency Diesel Generator Corrective Action Follow-up

a. Inspection Scope

The inspectors reviewed the licensee's corrective actions following an indeterminate run of the Unit 2 EDG on September 2, 2014, and a fast start surveillance failure of the Unit 2 EDG on September 30, 2014. Specifically, on September 2, 2014, while performing the semi-annual fast start portion of TS surveillance procedure DOS 6600–01, "Unit 2 Emergency Diesel Generator Monthly Operability Run" the licensee's review of a data recorder which measures the EDG's output frequency and voltage did not indicate valid data which prevented operators from determining if the generator output achieved rated frequency and voltage within the TS required 13 seconds. In response to follow-up questions by the inspectors, control room operators reported that the EDG started and achieved rated frequency and voltage and that the amount of time which had occurred following start switch manipulation until rated conditions were achieved, though not recorded, did not seem abnormally long. The licensee determined the test to be indeterminate, remained in the Technical Specification LCO time clock, replaced the chart recorder, and in accordance with procedures ensured diesel engine cooling water and lubricating oil temperatures returned to the standby control band to ensure the engine was not preconditioned for a subsequent run. With the above conditions met, the licensee successfully re-performed the fast start on the next shift with no discrepancies. In addition, the licensee sent the original chart recorder offsite for failure analysis and

rescheduled the next Unit 2 EDG fast start to coincide with the next monthly operability run instead of its semi-annual frequency. Laboratory testing of the chart recorder did not identify a deficiency with the test equipment which was returned to the site and put back in service as maintenance and test equipment.

On September 30, 2014, the licensee again performed a fast start of the Unit 2 EDG. The operators noted a substantial time (approximately 74 seconds) from engine start to the generator achieving rated conditions, which was considered a surveillance failure. The licensee maintained the engine running and then subsequently loaded the engine successfully in accordance with DOS 6600–01 once rated conditions were achieved. Operators in the field noted in addition to the delay in achieving rated conditions in the generator, the EDG room ventilation fan was delayed in starting for the same substantial period of time. Based on these observations and a review of plant drawings the licensee determined that an intermittent fault of the VSR speed sensing relay would result in these conditions. Specifically, as the diesel engine starts and accelerates to rated speed (900 RPM) as it achieves 800 RPM the VSR speed sensing relay actuates and performs two tasks 1) flashes the diesel generator field, enabling the engine to achieve rated frequency and voltage conditions, and 2) starts the EDG room ventilation fan. The licensee replaced the potentially flawed VSR speed sensing relay, but was not able to recreate this failure in laboratory testing. Following a successful post maintenance test run, the licensee restored the Unit 2 EDG to an operable status but increased fast start testing frequency to monthly. The licensee successfully maintained a monthly fast start testing frequency until January 2015 when it expanded it to bi-monthly with the intention of slowing opening the test interval until it restored the interval to the TS minimum requirement of semi-annual. The inspectors independently reviewed plant drawings, attended licensee troubleshooting meetings, and observed EDG testing from the field and main control room during the several weeks of licensee response to these events.

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) Supplemental Licensee Event Report 237/2014–002–02, “Unit 2 Reactor Scram Due to Main Power Transformer Failure”

On April 12, 2014, at 1012 CDT, the licensee received a Unit 2 reactor scram due to a faulted main power transformer due to an internal flashover. All control rods inserted to their full-in position and following the reactor trip all plant equipment operated as expected.

The most probable cause of the transformer failure was determined to be a combination of insulation issues. As a result, the transformer was replaced. Improved manufacturer oversight is being developed by the licensee as well as revising of procedures to ensure critical inspections are implemented during manufacturing.

This event was reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of the reactor protection system.

The inspectors reviewed and closed the original event report in Dresden NRC Integrated IR 2014–003. Supplemental LER 237/2014–002–001 was reviewed and closed in Dresden NRC Integrated Report 2014004 (ADAMS Accession Number ML14296A594). Documents reviewed are listed in the Attachment to this report. No 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 249/2014–001–00, and Supplemental Licensee Event Report 249/2014–001–01, "U3 Electromatic Relief Valve Failed to Actuate During Surveillance Testing"

On November 6, 2014 at 0912 CDT, with the reactor in mode 5 an ERV failed to open during a scheduled surveillance test. The operators in the field reported an audible click when the manual actuation was initiated. However, when the demand signal was given the actuator plunger did not move and the valve did not open. The cause of the failure was binding of the actuator due to excessive wear of the actuator guide posts.

This event was reported in accordance with 10 CFR 50.73(a)(2)(i)(B), as any operation or condition which was prohibited by the plant's TSs.

The NRC issued a White Finding and Notice of Violation in IR Number 05000249/2015008, (ADAMS Accession Number ML15085A273) dated March 26, 2015.

These LERs are closed.

This event follow up review constituted two samples as defined in IP 71153–05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 8, 2014, the inspectors presented the inspection results to Mr. S. Marik, 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 inspection results for the areas of in-plant airborne radioactivity control and mitigation; radioactive gaseous and liquid effluent treatment; and RETS/ODCM radiological effluent occurrences performance indicator verification with Mr. S. Marik, Site Vice President, on February 27, 2015.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Marik, Site Vice President
J. Washko, Station Plant Manager
D. Anthony, NDES Manager
L. Antos, Security Manager
J. Biegelson, Engineering
P. DiGiovanna, Training Director
D. Doggett, Emergency Preparedness Coordinator
B. Franzen, Regulatory Affairs Manager
D. Glick, Radioactive Material Shipping Specialist
F. Gogliotti, Engineering Director
G. Graff, Nuclear Oversight Manager
M. Hosain, Site EQ Engineer
B. Kapellas, Maintenance Director
D. Ketchledge, Engineering
D. Kim, System Engineer
M. Knott, Instrument Maintenance Manager
T. Mohr, Engineering Program Manager
G. Morrow, Operations Director
P. O'Brien, Regulatory Assurance–Corrective Action Program Coordinator
M. Overstreet, Radiation Protection Manager
M. Pavey, RP Specialist
D. Schiavoni, Engineering
R. Schmidt, Chemistry Manager
J. Sipek, Work Control Director
A. Trivera, CHP, Chemistry Specialist
D. Walker, Regulatory Assurance–NRC Coordinator

Nuclear Regulatory Commission

A. Boland, Director, Division of Reactor Projects
J. Cameron, Chief, Division of Reactor Projects, Branch 4

IEMA

M. Porfirio, Resident Inspector, Illinois Emergency Management Agency

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000237/2015001–01; 05000249/2015001–01	NCV	10 CFR 20.1701; Failure To Implement Effective Radiological Engineering Controls. (Section 2RS.3)

Closed

05000237/2015001–01; 05000249/2015001–01	NCV	10 CFR 20.1701; Failure To Implement Effective Radiological Engineering Controls. (Section 2RS.3)
237/2014–002–02	LER	Unit 2 Reactor Scram Due to Main Power Transformer Failure (Section 4OA3.1)
249/2014–001–00	LER	Unit 3 Electromatic Relief Valve Failed to Actuate During Surveillance Testing (Section 4OA3.2)
249/2014–001–01	LER	Unit 3 Electromatic Relief Valve Failed to Actuate During Surveillance Testing (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection (71111.01)

- IR 2434228, "U2 Off Gas Anomalies During Extreme Cold Temperatures"
- IR 2434081, "ISO Cond MU Heat Trace TRB"
- IR 2433850, "PMC Trending Shows U3 125 ALT Battery Area Temperature Low"
- IR 2433572, "2A ASD Low Temperature"
- IR 2432973, "U2 Stator Cooling Water Tank Vent Line Plugged"
- IR 2432398, "Low Temperature in Chemical Cleaning Building"
- OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines," Revision 12
- DOA 0010-02, "Tornado Warning / Severe Winds," Revision 19

1R04 Equipment Alignment (71111.04Q and S)

- DOP 1500-E1, "Unit 2 LPCI and CCSW Electrical Checklist," Revision 14
- DOP 1500-M1, "Unit 2 LPCI and Containment Cooling Valve Checklist," Revision 43
- IR 2466528, "Nomenclature Discrepancies During DOP 6900-E1 W/D"
- DOP 6900-E1, "Unit 3 DC Electrical Systems Checklist," Revision 12
- IR 2472418, " PMC – HPCI Booster Pump Seal Leak"
- IR 2472960, "Found PT Out of Tolerance (Non Tech Spec)"
- IR 2472961, "FlowScan of 3-2301-64 Lower Bench Set Pressure Found OOT"
- IR 2473128, "Sight Glass Found With a Crack"
- IR 2473262, "While Performing DIS 2300-09 PS 3-2380 Was Found OOT"
- IR 2473999, "3-2301-29 Valve Did Not Stroke Following Regulator Replace"
- IR 2474065, "Unit 3 HPCI Aux Oil Pump Motor Shorted"
- IR 2474109, "U3 HPCI Aux Oil Pump Failure"
- IR 2474275, "WO 1191671-01 for D3 10Y Over Speed Test Will Not Complete"
- IR 2474279, "Additional Actions for HPCI Aux Oil Pump Motor"
- IR 2474441, "U2 HPCI LCO Fragnet 223A Critique"
- IR 2475536, "U-3 HPCI Room Cooler Inspection Results"
- IR 2475554, "Unexpected Alarm 903-3 C-11, HPCI Turbine Exhaust Drain Pot Level High"
- IR 2477480, "NRC Concern"
- IR 2477315, "NRC Identified Issue"
- WO 1722435, "D3 HPCI System Venting"
- DOP 2300-01, "High Pressure Coolant Injection (HPCI) System Standby Operation," Revision 55
- DOP 2300-M1/E1, "Unit 3 HPCI System Checklist," Revision 38
- DOP 6900-04, "Unit 2 250V DC Ground Detection," Revision 15
- OP-AA-108-103, "Locked Equipment Program," Revision 2
- Drawing M-51, Diagram of High Pressure Coolant Injection Piping
- Drawing 20500-001, HPCI System and Instrumentation
- 12E-2526, Schematic Diagram High Pressure Coolant Injection Sys. Block Diagram & Control Switches Development

1R05 Fire Protection (71111.05)

- IR 2439783, “Fire Protection Question From NRC Resident”
- IR 2439158, “Unable to Examine Fire Extinguisher 182D”
- IR 2434492, “NRC Concern”
- IR 2434235, “U2 & U3 TB 571’ and 590’ Elevation FH Reels Isolated/Drained”
- Fire Protection Impairment Permit, Fire Marshall No. 15-007, Unit 2 Turbine Building
- Fire Protection Impairment Permit, Fire Marshall No. 15-0087, Unit 3 Turbine Building
- DFPS 4114-02, “Unit 2 Fire System inspection,” Revision 27
- M-23, Diagram of Fire Protection Piping
- Dresden Pre-Fire Plan for FZ 1.1.1.2, Revision 3
- IR 1196206, “U3 HPCI RM Preaction System Deluge Valve is Leaking”
- IR 2475545, “XL3 PSX 01 / SPX 02 Trouble 3-4199-141 Supervisory Current”
- DRES 97-015, Revision 09, Amendment 18, Fire Load Calculation Sheet for FZ 8.2.1.A/TB-I
- Dresden Pre-Fire Plan for FZ 8.2.1A, Revision 2
- Figure 3:3-9, Dresden Station Units 2 & 3, “Turbine Building Basement Floor”
- Dresden Generating Station Pre-Fire Plan, FZ 7.0 B, Revision 2

1R11 Licensed Operator Requalification Program (71111.11)

- IR 2442413, “Simulator Issue Lead to Schedule Change”
- IR 2441641, “NOS ID: CPA 15-01 SEG Contained Incorrect Action”
- TQ-JA-155-03, “Simulator Evaluation Job Aid,” Revision 0
- TQ-AA-155, “Conduct of Simulator Training and Evaluation,” Revision 3
- IR 2438206, “U2 CRD E-10 Double Notched During Unit Startup”
- IR 2438246, “Unexpected Alarm 902-4 A-10: RWCU Recirculation PP Trip”
- IR 2438330, “U2 CRD C-13 Difficult to Move”
- IR 2438331, “U2 CRD M-14 Difficult to Move”
- IR 2437662, “U2 Bailey FW System Scram 4.0 Critique”
- Reactivity Maneuver Plan D224-006, “Unit 2 Reactor Startup from All Rods in to <25% CTP”

1R12 Maintenance Effectiveness (71111.12)

- MRC Package for IR 112453-14, “SOER 94-01 Effectiveness Review Non-Conservative Decisions,” dated January 23, 2015
- IR 2470798, “Spurious Alarm 902-6 A9 2A MSDT DRN to 2D3 HTR Valve Closed”
- IR 2470787, “Spurious Alarm 902-6 B4 2B MSDT LVL LO”
- IR 2470492, “Recorder Becoming Erratic”
- IR 2468377, “Rod Overtravel Alarm on U3”
- IR 2468361, “Unexpected Alarm: Turbine Control Minor Trouble”
- IR 2466788, “Annunciator Power Supply Failures”
- IR 2463605, “Multiple Spurious Alarms on U3 MCR Panel 903-3”
- IR 2463124, “Barriers to Proper Monitoring in the Main Control Room”
- IR 2453407, “Part 21 – Amendment to 2013-38-01; Yokogawa Recorders”
- IR 2452832, “Unexpected Drop in 3B Recirculation Pump Indicated Flow on 3-260-7”
- IR 2450695, “DEHC Logic Change Needed to Prevent (Off Line) Turbine Trips”
- IR 2446376, “U2 250 VDC Ground Detector Unreadable”
- IR 2444667, “U2 250 VDC Detector Degradation Getting Worse”
- IR 2443389, “LIC 2/3-2012-840A Does Not Control In Auto”
- IR 2435133, “NRC Contact Regarding Main Control Room Deficiencies”
- IR 2430765, “Request for MOD to Recorder 2-0750-10B”

- IR 2430767, “Request for MOD to Recorder 2-0750-10C”
- IR 2430768, “Request for MOD to Recorder 2-0750-10D”
- IR 2430769, “Request for MOD to Recorder 2-0750-10A”
- IR 2430771, “Request for MOD to Recorder 3-0750-10B”
- IR 2430772, “Request for MOD to Recorder 3-0750-10C”
- IR 2430774, “Request for MOD to Recorder 3-0750-10D”
- IR 2435443, “Yokogawa Recorder Stuck in Calibration Mode”
- IR 2435508, “The 3A ASD HMI in the MCR Is Not Responding Properly”
- IR 2435656, “Unit 3 Main Steam Line High Rad Alarms”
- IR 2424531, “2-1290-2 Not Controlling Steady”
- Apparent Cause Investigation Report (ACE) for AR 2442674, dated March 18, 2015
- Event Notification #49205, “Part 21 Firmware Notice for Users of Yokogawa DX1000N and DX2000 Model Recorders”
- IR 1539969, “10 CFR Part 121 – Yokogawa DX 1000N & DX2000 Model Recorders”
- Letter from S. Eisenberg, National Technical Systems, to US Nuclear Regulatory Commission, Washington, DC, Subject: USNRC 10CFR Part 21 Notification, Reference: NTS CPAR 13-23, dated January 20, 2015
- OP-AA-108-105-1001, “MCR and RWCR Equipment Deficiency Management and Performance Indicator Screening,” Revision 5
- OP-AA-108-105, “Equipment Deficiency Identification and Documentation,” Revision 10
- WC-AA-106, “Work Screening and Processing,” Revision 14
- Maintenance Rule Periodic Assessment #10 (10CFR50.65 (a)(3) Assessment) for the period 10/1/2012 – 9/30/2014
- MRule Expert Panel Minutes for 3/31/2015
- MRule Expert Panel Minutes for 2/19/2015
- MRule Expert Panel Minutes for 12/11/2014
- IR 2448157, “SPC 1565226-05 Required IR”
- IR 2453579, “MRule Function 08-1 Needs (A)(1) Determination”
- IR 1698892, “Trend IR: Identified in Maintenance Rule Program”
- IR 2458157, “IR Generated to Generate EACE for RWCU Trips (IR 1565226)”
- MRC (Management Review Committee) Challenge package for IR 2458157, dated 03/24/2015

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

- Protected Equipment List for Unit 2, DIV 2 Core Spray
- Protected Equipment List for Unit 2, DIV 1 CCSW
- Protected Equipment List for Unit 2, DIV1 Core Spray
- Protected Equipment List for Unit 2, DIV I LPCI
- Protected Equipment List for Unit 2, Torus Spray Div I
- Protected Equipment List for Unit 2, DW Spray Div I
- Protected Equipment List for Unit 2, Torus Cooling Div I
- Protected Equipment List for Unit 2, ADS [automatic depressurization system]
- Protected Equipment List for Unit 2, HPCI
- IR 2449440, “345kv Bus 7 De-energized”
- IR 2453301, “PMC DWYD MH-3 Requires Dewatering”
- IR 2466978, “Document Findings of 345kv Trough Inspection”
- IR 2467538, “Results of INPO 345kv Switchyard Walkdown”
- IR 2469732, “Need to Dewater Switchyard Manhole #2”
- IR 2457968, “Unexpected Alarm 923-2 C-7, TR86 CB86 Trouble”
- IR 2461666, “Impact of Cold Weather Alerts for Week of 2/23”
- IR 2452743, “TR 81 Minor Trouble”

- IR 2449346, “TR-81 Trips”
- IR 2450884, “NRC Question Concerning Water in 345kv Switchyard Cable Runs”
- Drawing: M-29, Diagram of L.P. Coolant Injection Piping
- IR 2463808, “Flex U-2, DIV 1 LPCI LCO Work Deferred Due to Emergent Issue”
- IR 2462857, “RMA Shiftly Checklist Not Complete”
- IR 2462419, “Unexpected Alarm, 345kv L1202 Trip”
- IR 2462513, “Emergency Switching Orders Received From TSO”
- IR 2459378, “Crew 3 Crew Clock Reset”
- Protected Equipment List for Unit 2, High Pressure Coolant Injection
- Protected Equipment List for Unit 2, Drywell Spray Div II
- Protected Equipment List for Unit 2, Div 1 Core Spray
- Protected Equipment List for Unit 2, Torus Cooling Div II
- Protected Equipment List for Unit 2, Automatic Depressurization System
- Protected Equipment List for Unit 2, Div 2 Core Spray
- Protected Equipment List for Unit 2, Div II Low Pressure Coolant Injection
- Protected Equipment List for Unit 2, Torus Spray Div II
- Protected Equipment List for Unit 2, Div 2 Containment Cooling Service Water
- WC-AA-104, “Integrated Risk Management,” Revision 22
- WC-DR-104-1001, “Dresden 345kv Switchyard Configuration Risk Assessment,” Revision 07
- ER-AA-600-1042, “On-Line Risk Management,” Revision 9
- OP-AA-108-117, “Protected Equipment Program,” Revision 4
- OP-AA-108-117-1001, “Protected Equipment and Pathway Policy,” Revision 06, Level 3 – Information Use
- OP-DR-201-012-1001, “Attachment 35, RMA Checklist #35 U2 Turbine Bldg, Cond. Transfer Pumps/Hallway EL 517’,” Revision 02

1R15 Operability Determinations and Functional Assessments (71111.15)

- EC99167, Revision 001, “LPCI Loop I HDR INJ to Recirculation Flow Indicator 2-1591-A Replacement”
- IR 2434985, “Unauthorized Jumper Installed”
- DOS 1500-10, “LPCI System Pump Operability and Quarterly Test With Torus Available and Inservice Testing (IST) Program,” Revision 69
- DOS 1500-02, “Containment Cooling Service Water Pump Test and Inservice Test (IST),” Revision 83
- 12E-2701, Wiring Diagram main Control Board Panel 902-3 Core Spray Auto Blowdown & LPCI System I
- 12E-6836, Schematic Diagram LPCI Containment Cooling System Core Spray
- 12E-2434, Schematic Diagram LPCI/Containment Cooling Alarm Notes & Reference
- Drawing: M-29, Diagram of L. P. Coolant Injection Piping
- IR 2438292, “2B DW Rad Monitor Failed Downscale”
- IR 2438304, “2B Drywell Hi Rad Monitor Failure”
- IR 2439464, “U2 Drywell CAM Activity Trend Identified”
- IR 2437445, “Drywell Hi Rad Monitor Failure”
- WO 1789719, “D3 Qtr TS MSIV Scram Functional Test”
- IR 2445657, “RPS Relay Did Not Drop Out, Entered Tech. Spec.”
- IR 2384067, “2C Outboard MSIV Test Circuit Malfunction”
- DOS 0500-27, “Unit 3 Main Steam Line Isolation Valve Closure Scram Circuit Functional Test,” Revision 02
- 12E-3464, Schematic Diagram Reactor Protection System Channel ’A’ Trip Aux. Relays
- 12E-3464, Schematic Diagram Reactor Protection System Channel ’B’ Trip Aux. Relays

- 12E-3465, Schematic Diagram Reactor Protection System Channel 'A' Scram & Auxiliary Trip Relays
- 12E-3466, Schematic Diagram Reactor Protection System Channel 'B' Scram & Auxiliary Trip Relays
- IR 2466888, "Historical Operability Review for IR 2449230"
- IR 2449235, "1B MSIV Limit Switch Bracket Loose"
- IR 1427083, "NRC Questions PCIV Tech Spec for MSIVs"
- IR 1277424, "MSIVs Need Timing Prior to Startup"
- IR 2466888, "Historical Operability Review for IR 2449230"
- IR 2449230, "2B & 2D MSIV's in Need of Timing"
- IR 1408507, "MSIV Closure Times Outside "Desired" Band"
- IR 2467147, "Historical Operability of MSIV 2-0203-1B, ACIT 02449235-02"
- DOS 0250-02, "Full Closure Timing and Exercising of Main Steam Isolation Valves," Revision 26
- WO 1420031-01, "Replace Both D2 HPCI Turbine Exhaust Line Rupture Discs 2-2301-68 & 2-2301-69"
- WO 1481962, "D2 QTR/CSD TS Full Closure Timing/Exercise of MSIV's for IST"
- WO 1571125, "D2 WTR/CSD TS Full Closure Timing/Exercise of MSIV's for IST"
- WO 1571125, "D2 WTR/CSD TS Full Closure Timing/Exercise of MSIV's for IST"
- EC 372314, "Evaluation of As-Found MSIV Closure Times in D2F49," Revision 00
- Apparent Cause Report for IR 1277424, "MSIV Timing Acceptance Criteria Not Met in D2R22"

1R18 Plant Modifications (71111.18)

- EC 394705, "Main Steam ERV Actuator Upgrade for Dresden Unit 2," Revision 0
- WO 1661347, "Main Steam ERV Actuator Upgrade – U2"
- WO 1805847, "Contingency WOs to Visually Inspect all U2 ERVs"
- IR 2462011, "DEE 8352 Discretionary Crew Clock Reset"
- IR 2448932, "IR to Recommend a WR to Inspect U2 ERV Actuators"
- IR 2449137, "2C ERV Solenoid Failure"
- IR 2449516, "New 2-0203-3D ERV Solenoid Failed Bench Test"
- IR 2450182, "Anomaly Identified During 2D ERV Power Wiring Checks"
- IR 2450183, "Grounds & Open Indications on ERVs During CO Clearance"
- IR 2451370, "EC 394705 Implementation Issues (U2 ERV Actuator MOD)"
- Apparent Cause Investigation Report (ACE) for AR 2451370, dated March 17, 2015
- Drawing: 239LN001-04, Electromatic Relief Valve

1R19 Post-Maintenance Testing (71111.19)

- WO 1770622, "Request for Contingency Work package for 2/3 EDG"
- DOS 6600-01, "Diesel Generator Surveillance Tests," Revision 127
- IR 2440163, "U2 DIV II CCSW Vault Cooler Vent line Plugged"
- WO 1376363, "D2 16Y PM CCSW PP DISCH CK VLV Sample Replace / INSP 2-1501-1C"
- WO 1205450, "6Y COM MOV Diagnostic Testing & Limitorque SURV 2-1501-5D"
- DOS 1500-02, "Containment Cooling Service Water Pump Test and Inservice Test (IST)," Revision 83
- IR 2444524, "NRC Senior Resident Concerns"
- IR 2443876, "Unit 3 Diesel Fuel Transfer Pump Higher Vibes"
- WO 1513264, "U3 EDG Fuel Oil Transfer Pump Seal Leak"
- WO 1797718, "D3 1M TS Unit Diesel Generator Operability"
- WO 1797719, "D3 1M TS Outside Fuel Oil Storage, Sample Fuel Oil"

- WO 1797720, “D3 1M COM Diesel Generator, Sample Crankcase Oil”
- WO 1797722, “D3 1M TS Diesel Fuel Oil Day Tank, Sample Fuel Oil”
- WO 1707248, “D3 AN PM Change EDG Starting Air Filter Elements 3-4600-E”
- WO 1707936, “D3 AN COM Replace Air Start Regulating Valve on EDG”
- WO 1406239, “D3 4Y PM 4KV CUB Inspection Bus 34-1 CUB 7; D/G”
- M-173 Diagram of Corrosion Test & Diesel Start-Up Air Piping
- DOS 6600-01, “Diesel Generator Surveillance Tests,” Revision 127
- WO 1800173, “Controller 2-1290-2 Not Controlling Steady”
- IR 02424531, “Controller 2-1290-2 Not Controlling Steady”
- DOP 1200-03, “RWCU System Operation With the Reactor at Pressure,” Revision 66
- WO 1661347, “Main Steam ERV Actuator Upgrade – U2”
- IR 2449137, “2C ERV Solenoid Failure”
- IR 2449497, “ERV Labeling in JBS Do Not Match Prints”
- IR 2450182, “Anomaly Identified During 2D ERV Power Wiring Checks”
- IR 2450183, “Grounds & Open Indications on ERVs During CO Clearance”
- IR 2450344, “No Alarm for 2E ERV Open”
- IR 2450352, “Open Light Did Not Illuminate for 2C ERV”
- IR 2451502, “Elevated 2C and 2D ERV Pilot and Tailpipe Temperatures”
- IR 2456956, “2C ERV Tailpipe Temp High and Erratic”
- DOS 0250-07, “Electromatic Relief Valve Testing with the Reactor Depressurized,” Revision 05

1R20 Outage Activities (71111.20)

- IR 2437687, “Main Steam By-Pass Line 2-3004G-8” Slope Issues”
- IR 2437670, “Main Steam By-Pass Line 2-3004I-8” Slope Issues”
- IR 2437204, “U2 CRD D-03 Failed to Unlatch and Exercise”
- IR 2437803, “CRD C-12 Double Notched Out During Exercising”
- IR 2437038, “U2 Turbine Rolled Off Turning Gear”
- IR 2437007, “2C Cond Boost Pump Relief Valve Failed Open on Scram”
- IR 2437088, “Support for Snubber 2-3004J-03 Separated From Wall”
- IR 2437035, “2B Recirculation Pump Did Not Run Back During Scram”
- IR 2452432, “Enhanced Feedwater Heater Monitoring Plan”
- IR 2452487, “2B MSDT LVL LO Alarm During Post-D2F56 Power Ascension”
- IR 2449353, “Found Loose Terminal / Wire (U2 ASD)”
- IR 2449224, “Bailey 2-0640-40A DIP Switch Configuration Error”
- IR 2450026, “Verification of the Unit 3 Bailey Dip Switch Configuration”
- IR 2448892, “Need WR to TS&R Cause of U2 Scram”
- IR 2448797, “2 Steam Leaks Identified During Down Posting Survey of LPHB”
- IR 2450063, “2A ASD MMR and DFR Status CKT CTRL PWR Fuse Blown”
- IR 2450082, “APRM 4 Unable to Verify Downscale During DOS 0500-03”
- IR 2449462, “CRD 26-59 (G-15) loss of RPIS at Position ‘00’”
- IR 2448939, “Exposed JB Wiring From the 2-3104-A FCV”
- IR 2451103, “Potential Vibration Induced Degradation”
- IR 2451294, “U2 Main Turbine Differential Expansion Indication Offset”

1R22 Surveillance Testing (71111.22)

- WO 1789722-01, “D3 QTR TS Main Steam Line High Flow Isolation”
- DIS 0250-01, “Main Steam Line High Flow Isolation Switch Channel Calibration and Channel Functional Test,” Revision 34

- 50.59 Review Form for DIS 0250-01, “Main Steam Line High Flow Isolation Switch Channel Calibration and Channel Functional Test,” Revision 34
- IR 2465665, “IM Q ATWS RPT/ARI Press MTU Function DIS 0263-09 Risk”
- IR 2467621, “Group I Channel Testing Bypass Testing Banana Jacks Needed”
- IR 2472008, “D3 MSL Hi Flow SW 3-261-2A Out of As Found Tolerances”
- IR 2472032, “D3 MSL Hi Flow SW 3-0261-2G Out of As Found Tolerances”
- IR 2059802, “OIO Benchmark: Group 1 Isolation Testing”
- 12E-2501, Schematic Diagram Primary Containment Isolation System Sensor and Trip Logic
- WO 1812763-01, “TS/Repair 3-2001-6 Valve Failed Closed During Normal Pumping”
- IR 1644749, “Unexpected Alarm 903-4 F-17 RBEDT LVL Hi”
- IR 2465006, “3-2001-6 Valve Failed Closed During Normal Piping”
- IR 2470307, “NRC Questioning the Recent Failure with 3-2001-6 Valve.”
- DOP 0201-07, “Unit 3 RPV Leak Check,” Revision 07
- DOP 2000-24, “Drywell Sump Operation,” Revision 30
- DOP 2000-180, “Drywell Sump Operation With Unit On-Line,” Revision 04
- DOP 0230-03, “Drywell Leak Detection and Torus Water Temperature Monitor Recorders,” Revision 10
- DOP 0010-10, “Unit 2 (3) Technical Specification Instrumentation Operability Manual,” Revision 64
- DOA 0040-01, “Slow Leak,” Revision 28
- DAN 902(3))-4 A-17, “Drywell Equip Sump LVL HI-HI,” Revision 07
- ER-AB-331-1006, “BWR Reactor Coolant System Leakage Monitoring and Action Plan,” Revision 2
- OP-DR-108-111-1003, “Drywell Leakage Troubleshooting,” Revision 05
- DIS 0203-03, “Drywell Leak Detection System Recorder Calibration,” Revision 21
- DTP 09, “Leak Detection and Reduction Program (W-2) (W-3) (W-8),” Revision 15
- RG 1.45, “Guidance on Monitoring and Responding to Reactor Coolant System Leakage,” Revision 1
- WO 1772628, “2C Outboard MSIV Test Circuit Malfunction”
- WO 1730547, “D2 Qtr/CSD TS Full Closure Timing/Exercise of MSIVs for IST”
- WO 1805865, “U2 1B Inboard MSIV Dual Indication”
- IR 1633913, “Temperature Indication Is Erratic”
- IR 2449896, “2B MSIV Open Indication Not Functional”
- IR 2449908, “2D MSIV Open Indication is Sluggish”
- IR 2449130, “U2 1B Inboard MSIV Dual Indication”
- IR 2449230, “2B & 2D MSIVs in Need of Timing”
- IR 2449235, “1B MSIV Limit Switch Bracket Loose”
- IR 2450030, “2-0590-102A Failed to Drop Out During DOS 0500-20”
- IR 2450032, “Comp Point W011 Failed to Change State (DOS 0500-20)”
- IR 2454758, “NRC Question About performance of DOS 0250-02”
- DOS 0250-02, “Full Closure Timing and Exercising of Main Steam Isolation Valves,” Revision 28
- DOS 0500-20, “MSIV Closure Scram Circuit Functional Test,” Revision 17
- WO 1804638, “D3 1M TS 3B Off Gas H2 Analyzer CH Functional Test and Calibration”
- DOS 5400-05, “Off Gas Hydrogen Analyzer High Hydrogen Concentration Alarm Check, Channel Functional Check and Calibration,” Revision 19
- DOP 5400-18, “Off Gas Sample Conditioning for H2 and O2 Analyzers and Hydrogen Analyzer Startup and Shutdown,” Revision 40

1EP6 Drill Evaluation (71114.06)

- EP-AA-125, “Emergency Preparedness Self Evaluation Process,” Revision 8
- EP-AA-110, “Assessment of Emergencies,” Revision 9
- EP-AA-111, “Emergency Classification and Protective Action Recommendations,” Revision 18
- EP-AA-112, “ERO/ERF Activation and Operation,” Revision 16

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

- ALARA-10016007, Refuel Floor In-Vessel Visual Inspection Activities
- RWP-10016006, “Dresden Unit 3 Refueling Outage Number 23 (D3R23) Refuel Floor Reactor Disassembly/Reassembly and Related Activities,” Revision 1
- Reactor Disassembly/Reassembly As-Low-As-Reasonably-Achievable (ALARA) Plan Requirements and Cavity Drain Preparations D3R23
- TEDE ALARA Evaluation Screening Worksheet, RWP-10016006, D2R23 Reactor Disassembly/Reassembly, November 3, 2014
- TEDE ALARA Evaluation Screening Worksheet, RWP-10016006, D2R23 Reactor Disassembly/Reassembly, November 22, 2014
- TEDE ALARA Evaluation RWP-10016006, Task: D3R23 Reactor Reassembly Airborne Calculation, November 14, 2014
- ALARA Work-In-Progress Review for D3R23 Disassembly/Reassembly and Associated Activities, November 13, 2014
- D3R23 ALARA Plan for Airborne Radiation Mitigation Techniques, November 20, 2014
- CR-2411760, Apparent Cause Investigation Report, “D3R23 Work Stopped on Refuel Floor After a Continuous Air Monitor Alarmed,”
- IR-02408292, “NRC Observation of Refuel Floor Work”

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

- Work Order (WO)-01555407, “D2/3 24 Month Tech Spec Chimney Flow Monitor Calibration”
- DIS-5700-03, “Unit 2/3 Chimney Flow Monitor Calibration and Functional Test,” Revision 17
- WO-01474710, “D2/3 “B” Standby Gas Treatment (SBGT) High-Efficiency Particulate Air (HEPA) Filter Leak Test Using DTS-7500-11,”
- DTS-7500-11, “DOP Testing of Unit 2/3 SBGT HEPA Filter Test,” September 10, 2014
- Exelon Nuclear Historical Release, Accident Discharges and Disposal Areas Source Identification Worksheet for 10 CFR 50.75(g) File
- Echert and Ziegler Analytic, Results of Radiochemistry Cross-Check Program, dated 1st -4th Quarter 2014 for Exelon Dresden Unit-2/3
- Open EMS, Effluent Management Software Gas Permit Post Release Data on Unit 1/2/3, Turbine, Chem. Cleaning Building, Reactor Building Vent, Chimneys, and Chemistry; Data dated between March 2013 through October 2013
- REM-9-1, “Land Use Census Environmental Inc.,” Revision 1; July through October 2014
- PI-AA-126-1005-F-01, Check-in Self-Assessment 2015
- CY-AA-130-300, “Gamma Spectrometry,” Revision 6
- CY-AA-130-3000, “Gamma Isotope Review,” Revision 4
- CY-AA-130-320, “Packard 2900 TR/3100 TR, Liquid Scintillation Counter”
- CY-AA-170-000, “Radioactive Effluent and Environmental Monitoring Programs,” Revision 6
- CY-DR-110-200, “Plant System Sampling,” Revision 40
- CY-DR-170-215, “Unit 2/3 Main Chimney Sampling,” Revision 15
- CY-DR-170-220,”Reactor Building Vent,” Revision 20

- CY-DR-170-300, “Main Condenser Air Ejector Monitor Alarm Set-Point Calculation,” Revision 3
- CY-Dr130-322, “Tritium Analysis,” Revision 2
- CY-DR-120-340, “Off Gas Sampling Procedure,” Revision 23
- CY-DR-120-600, “Liquid Radwaste Scaling Factor,” Revision 1
- CY-DR-170-2030, “Unmonitored Radiological Release,” Revision 0
- CY-DR-170-2040, “Noble Gas Effluent Release,” Revision 0
- CYDR-120-5200, “Radiological Monitoring of Sewage and Waste Water Effluent,” Revision 4
- Nuclear Procurement Issues Committee (NUPIC) Audit No. 23484; NUPIC Joint Audit of Teledyne Brown Engineering-Environmental Services; Knoxville, TN
- IR-01608382, “Canberra Open EMS Effluent Software Issues,” January 15, 2014
- IR-01617643, “B Off Gas Cooler Condenser Train Parameter,” February 2, 2014
- IR-01669137, “Elevated Tritium Reading on STP Effluent,” June 7, 2016
- IR-01669137, “Revised Calculation DRE-00-0054, CST Levels for Tank Bottom Repair, CST Level Error Analysis to Incorporate Changes on EC-398413, and a Previous Historical Modification – Which Increases the Tank Bottom Elevation to Approximately 3 inches”
- IR-01555798, “Off Dose Calculation Manual (ODCM) Time Clock Exceeded for 2/3 Chimney SPING,” September 9, 2013
- IR-01606375, “Trip/Isolation of Unit-2 Reactor Building Vent,” January 10, 2014
- IR-01605907, “Dresden-2 RBCCW Rad Monitor High-Voltage Adjustment Needed,” January 9,2014
- IR-01699705, “Trending IR that Unit-2 Service Water Radiation Monitor (SWRM) Declared Inoperable,” September 4, 2014
- IR-02460361, “SWRM Unavailable Time,” February 27, 2015
- IR-01698155, “Trend that SWRM Reliability Issues Were Indicated Since 2011,” August 29, 2014
- IR-02459698, “Unexpected Indication While Performing Reactor Building Vent Sampling,” February 26, 2015
- IR-02405295, “Unit-2 Service Water Radiation Monitor Contingency Package and Parts,” November 2, 2014
- IR-02405296, “Unit-3 Service Water Radiation Monitor Contingency Package and Parts,” November 2, 2014
- IR- 02415268, “Unit-3 “B” Off Gas Radiation Monitor Failed,” November 20, 2014
- IR-02420927, “Unit-2/3 Service Water Radiation Monitor Alarms,” December 4, 2014

4OA1 Performance Indicator Verification (71151)

- IR 2440175, “Dresden Unit 2 Enters Exelon Action Level for NRC PI”
- LS-AA-2150, “Monthly Data Element for RETS/ODCM Radiological Effluent Occurrences,” Revision 5, Data Reviewed from January 2015 through December 2014

4OA2 Identification and Resolution of Problems (71152)

- MRC Package for IR 2430137, “U2 EDF Auto Tripped Upon Start of Surveillance,” presentation date: 02/04/15
- IR 2430137, “U2 EDG Auto Tripped Upon Start of Surveillance”
- IR 2432819, “SPC 023881320-03”
- IR 2430759, “Historic Operability Evaluation Required for U2 EDG”
- IR 1698832, “U2 DG Fast Start Data Inconclusive”
- IR 1699242, “U2 EDG Fast Start DOS 6600-01 and Test Recorder Issue”
- IR 1762124, “NRC Questions Operability Determination for U2 EDG”

- IR 2387249, “EDG Fast Start Test Recorder Program DIP 6600-01 Revised”
- IR 2388132, “U2 EDG Semi-Annual Fast Start Failure”
- IR 2388984, “EMD Resources Needed to Assist OPS for U2 EDG”
- IR 2389070, “NRC Questions for U2 EDG Fast Start Issues”
- IR 2389220, “Recommended Additional Troubleshooting Actions for U2 EDG”
- IR 2390062, “Unplanned SSPI [Safety System Performance Indicator] Unavailability – U2 EDG”
- IR 2393297, “Need Contingent Work Order to Support U2 EDG Fast Start”
- IR 2415873, “Increased Monitoring of U2 EDG to Monitor Condition”
- Certificate of Calibration, # 0010818370,for Scopecorder, dated April 30, 2014
- Certificate of Calibration, # 0010842839,for Scopecorder, dated September 9, 2014
- DIP 6600-01, “Diesel Generator Yokogawa SL1400 Multichannel Test Recorder Setup / Functional Check,” Revision 12
- WO 1788660, “D2 1M TS Unit Diesel Generator Operability”
- WO 1795660, “U2 EDG Auto Tripped Upon Start of Surveillance”
- Troubleshooting chart and error message index from Yokogawa SL1400 Multichannel Test
- 12E-2350A, Schematic Diagram Engine Control & Gen. Excitation Standby Diesel Generator

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

- IR 1646633, “Main Power Transformer Failure Due to an Indeterminate Cause”
- Root Cause Investigation Report for IR 1646633-08, “Main Power Transformer Failure Due to an Indeterminate Cause”
- IR 2454895, “Screening of Unexplained Abnormal Conditions Per ER-AA-2003”
- Operational Decision Making Issue 01646633, “Dresden U2 automatically scrammed on a Main Power Transformer (2-6200-T2) sudden pressure relay (SPR) trip”

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAM	Continuous Air Monitor
CAP	Corrective Action Program
CCSW	Containment Cooling Service Water
CFR	Code of Federal Regulations
CRD	Control Road Drive
D2F55	Dresden Unit 2 Forced Outage Number 55
D2F56	Dresden Unit 2 Forced Outage Number 56
D3R23	Dresden Unit 3 Refueling Outage Number 23
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
ERV	Electromatic Relief Valve
FWLCS	Feed Water Level Control System
HEPA	High-Efficiency Particulate Air
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IST	Inservice Test
LCO	Limiting Conditions for Operations
LER	Licensee Event Report
LLC	Limited Liability Corporation
LPCI	Low Pressure Coolant Injection
MCR	Main Control Room
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NUPIC	Nuclear Procurement Issues Committee
ODCM	Offsite Dose Calculation Manual
PAPR	Powered Air Purifying Respirator
PARS	Publicly Available Records System
PI	Performance Indicator
PM	Post, Planned or Preventative Maintenance
PMT	Post-Maintenance Testing
RCS	Reactor Coolant System
RG	Regulatory Guide
RWCU	Reactor Water Cleanup
SSCs	Structures, Systems and Components
SDP	Significance Determination Process
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VDC	Volts Direct Current
WO	Work Order

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Sincerely,

/RA/

Jamnes Cameron, Chief
Branch 4
Division of Reactor Projects

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