



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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April 20, 2017

Mr. Bryan C. Hanson  
Senior VP, Exelon Generation Company  
LLC President and CNO, Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

**SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3—NRC INTEGRATED  
INSPECTION REPORT 05000237/2017001 and 05000249/2017001**

Dear Mr. Hanson:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Dresden Nuclear Power Station, Units 2 and 3. On April 7, 2017, the NRC inspectors discussed the results of this inspection with Mr. J. Washko and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as Non-Cited Violations (NCVs), consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at the Dresden Nuclear Power Station.

If you disagree with the cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III, and the NRC Resident Inspector at the Dresden Nuclear Power Station.

B. Hanson

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This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

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 05000237/2017001; 05000249/2017001

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from Jamnes Cameron dated April 20, 2017

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3—NRC INTEGRATED INSPECTION REPORT 05000237/2017001 and 05000249/2017001

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000237/2017001; 05000249/2017001

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station, Units 2 and 3

Location: Morris, IL

Dates: January 1 through March 31, 2017

Inspectors: G. Roach, Senior Resident Inspector  
R. Elliott, Resident Inspector  
J. Wojewoda, Acting Resident Inspector  
J. Corujo-Sandin, Reactor Inspector  
T. Go, Health Physicist  
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Approved by: J. Cameron, Chief  
Projects Branch 4  
Division of Reactor Projects

Enclosure

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## SUMMARY

Inspection Report 05000237/2017001, 05000249/2017001; 01/01/2017 – 03/31/2017; Dresden Nuclear Power Station, Units 2 and 3; Operability Determinations and Functional Assessments, and Follow-Up of Events and Notices of Enforcement Discretion.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was identified by the inspectors and one Green finding was self-revealing. The findings involved Non-Cited Violations (NCVs) of U.S. Nuclear Regulatory Commission (NRC) requirements. 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 April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

### Cornerstone: Mitigating Systems

- Green. The NRC identified a finding of very low safety significance and associated NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality, originally identified in Issue Report (IR) 2501498, associated with instructions and acceptance criteria in the emergency diesel generator (EDG) surveillance procedures to ensure that the single largest load rejection test bounded the power demand of the largest load in accordance with Technical Specification Surveillance Requirement (TSSR) 3.8.1.10. Specifically, the failure to correct a condition adverse to quality associated with the inadequate performance of TSSR 3.8.1.10 required an operability determination and engineering assessment to ensure continued operability of the site's three EDGs.

The performance deficiency was determined to be more than minor, and thus a finding, in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Mitigating Systems cornerstone attribute of Procedure Quality and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," issued October 7, 2016, to this finding. The inspectors answered "No" to all questions within Table 3, "Significance Determination Process Appendix Router," and transitioned to IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. The inspectors answered "No" to all questions in Exhibit 2, "Mitigating Systems Screening Questions, Section A: Mitigating SSCs and Functionality." Therefore, the finding was screened as very low safety significance. The inspectors concluded that the cause of the finding involved a cross-cutting component in the area of Human Performance, Documentation, in that the licensee did not create and maintain complete, accurate and up-to-date documentation. Specifically, the licensee utilized surveillance procedures (DOS 6600-03, 04 and 05) which did not ensure that design post-accident conditions were met during testing. In addition, the licensee created Corrective Action Program (CAP) actions, to make procedure changes to operations surveillance DOS 6600-12 to establish bounding conditions for TSSR 3.8.1.10, that were never incorporated. [H.7] (Section 1R15)

## Cornerstone: Barrier Integrity

- Green. A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification (TS) 5.4.1, "Procedures," occurred on November 8, 2016, due to the licensee's failure to follow procedures designed to ensure secondary containment integrity, when reactor building (RB) pressure relative to the outside environment was less than 0.25 inches water column (in WC) vacuum as required by TS 3.6.4.1, "Secondary Containment." Specifically, work group personnel did not communicate to operations regarding degraded sealing surfaces on the RB Equipment Access outer door as required by procedure DAP 13-03, "Unit 2 Reactor Building Trackway Interlock Door Access Control," therefore when standby gas treatment (SBGT) started as a part of a planned surveillance test, vacuum lowered, rendering secondary containment inoperable.

The performance deficiency was determined to be more than minor, and thus a finding, in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Barrier Integrity Cornerstone Attribute of Human Performance and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (secondary containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the drop in secondary containment differential pressure to less than 0.25 in WC vacuum, resulted in a loss of secondary containment and failure of its safety function as specified by TS 3.6.4.1 and Updated Final Safety Analysis Report (UFSAR) section 6.2.3. The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," issued October 7, 2016, to this finding. The inspectors answered "No" to all questions within Table 3, "Significance Determination Process Appendix Router," and transitioned to IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. The inspectors reviewed the Barrier Integrity Screening Questions in Appendix A, Exhibit 3 and answered "Yes" to question C.1. As a result, the finding was determined to have very low safety significance (Green). This finding has a cross cutting aspect in the area of Problem Identification and Resolution, Identification, because individuals failed to identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee did not report a condition adverse to quality with regards to degraded seals on the RB equipment access outer door to operations as required by procedure DAP 13-03, therefore not ensuring secondary containment integrity. [P.1] (Section 4OA3)

## REPORT DETAILS

### Summary of Plant Status

#### Unit 2

Unit 2 operated at or near full power for the duration of the inspection period.

#### Unit 3

Unit 3 operated at or near full power from the start of the inspection period until February 9 when a brief power reduction to 90 percent power (875 MWe) was performed in order to perform main turbine valve repairs. The unit was returned to full power the next day where it operated at or near 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—Severe Thunderstorms and Tornadoes Predicted

##### a. Inspection Scope

Since thunderstorms with potential tornadoes and high winds were forecasted in the vicinity of the facility for February 28, 2017, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On February 28, 2017, the inspectors walked down the perimeter of the power block buildings, including offsite power equipment and the emergency alternating current (AC) power systems, because their safety-related functions could be affected or required as a result of high winds, tornado-generated missiles, or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions which included a review of maintenance activities which were rescheduled outside of the period of expected adverse weather conditions. During the inspectors' tour of the plant grounds, they looked for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Following the period of high winds and adverse weather, the inspectors reviewed the licensee's thermography of the switchyard and components associated with offsite power to determine if there were any adverse conditions created by the harsh weather. Additionally, the inspectors reviewed the UFSAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report.

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



b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- 2A core spray(CS) w/ 2B CS out-of-service(OOS);
- Unit 2 EDG with U3 EDG OOS; and
- Unit 3 isolation condenser (IC) with high pressure coolant injection (HPCI) OOS.

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

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

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On February 27, 2017, the inspectors performed a complete system alignment inspection of the Unit 2 low pressure coolant injection (LPCI) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment 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. This sample meets the requirement to perform at least one complete system alignment sample of a mitigating system in accordance with IP 71111.04–02.02.a.

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 1.1.1.6, Unit 3 refueling floor elevation 613’;
- Fire zone 1.1.2.6, Unit 2 refueling floor elevation 613’;
- Fire zone 11.2.1, Unit 2 southwest emergency core cooling system (ECCS) corner room elevation 476’; and
- Fire zone 11.2.3, Unit 2 HPCI room elevation 476’.

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

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

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed the licensee's response to and monitoring of a degraded wall thickness condition affecting the common unit main underground service water pipe as it enters the common turbine building. The inspectors reviewed and walked down the licensee's adverse condition monitoring plan which included tell-tale drains for the early identification of leakage from the pipe as the piping wall thickness continues to degrade. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by a failure of the service water system and reviewed assessment data for other raw water systems including fire protection and the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program as well as plans to transfer to the overhead common service water pipe and long term repairs to the degraded underground pipe to verify the adequacy of the corrective actions.

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

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

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

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On January 24, 2017, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

On February 9, 2017, the inspectors observed main control room operators during a Unit 3 emergent down power to 90 percent power for main stop valve repair. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Unit 3 reactor building closed cooling water (RBCCW); and
- Unit 2 instrument air.

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

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

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

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

b. Findings

No findings 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 and Unit 3 online risk Yellow during 2/3A and B standby gas treatment (SBGT) flow transmitter calibrations;
- normal source of offsite power to station black out busses OOS during planned Unit 2 EDG work window;
- Unit 3 online risk Yellow during HPCI work window;
- Unit 2 online risk Yellow during HPCI work window; and
- Unit 2 adjustment of main generator reactive loading at the local control panel while normal voltage control was inoperable.

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

Documents reviewed during this inspection are listed in the Attachment to this report.

These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- fuel zone level calibration accuracy;
- Operability Evaluation (OPEVAL) 17-001, Degraded 2B LPCI heat exchanger thermal performance;
- OPEVAL 17-002, EDG single largest load rejection surveillance requirement 3.8.1.10 procedural adequacy;
- 2/3 EDG to Bus 33-1 breaker failure to close; and

- Unit 3 containment cooling service water (CCSW) through wall leak on American Society of Mechanical Engineers (ASME) Code class 3 piping.

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

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

b. Findings

Introduction: The U.S. Nuclear Regulatory Commission (NRC) identified a finding of very low safety significance (Green) and associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality, originally identified in Issue Report (IR) 2501498, associated with instructions and acceptance criteria in EDG surveillance procedures. Specifically, surveillance procedures DOS 6600-03, 04, and 05 are meant to ensure that the single largest load rejection test bounds the power demand of the single largest post-accident load in accordance with Technical Specification Surveillance Requirement (TSSR) 3.8.1.10.

Description: During a review of licensee CAP documents associated with historic issues identified in the area of surveillance testing, the inspectors noted IR 2501498, "TSSR 3.8.1.10: EDG Largest Load Reject," dated May 15, 2015. The IR in question described a condition identified by operations personnel which stated that when TSSR 3.8.1.10 was performed, a service water pump, which had been identified in the Technical Specification Bases document and engineering documents as the single largest load, was to reject 686 kilowatts (KW) under accident conditions. A review of actual load rejection during the most recent performances of this surveillance for all three EDGs indicated an actual load rejection of between 525-575 KW. The lower KW rejected were due to a lower heat load on the service water system in the colder month of November when the tests are performed during the Dresden Unit 2 or 3 refueling outages.

TSSR 3.8.1.10 specifically requires that each EDG reject a load greater than or equal to its associated single largest post-accident load, and:

- a) following load rejection, frequency  $\leq 66.73$  Hz;
- b) within 3 seconds following load rejection, voltage is  $\geq 3952$  V and  $\leq 4368$  V; and
- c) within 4 seconds following load rejection, the frequency is  $\geq 58.8$  Hz and  $\leq 61.2$  Hz.

The licensee performed the rejection of a service water pump, with its respective EDG solely powering their associated safety-related buses, as a part of operations surveillance procedures DOS 6600-03 (2/3 EDG to Unit 3), DOS 6600-04 (Unit 3 EDG), and DOS 6600-05 (Unit 2 EDG). These procedures performed the single largest load rejections utilizing the acceptance criteria called out by TSSR 3.8.1.10, but did not have operators verify that at least 686 KW was rejected, therefore ensuring that the EDG would be able to meet acceptance criteria under design post-accident conditions.

In addition to performing a single largest load reject surveillance, the licensee also performs a full load reject surveillance in accordance with TSSR 3.8.1.11 in which the EDG must reject  $\geq 2340$  KW and  $\leq 2600$  KW while not experiencing an over speed trip or exceeding a generator output  $\geq 5000$  V. The licensee accomplishes this surveillance requirement with the EDG fully loaded and in parallel with the electrical grid. Operations surveillance procedure DOS 6600-12, "Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/ Hot Restart" is used to accomplish this surveillance requirement.

The licensee's corrective actions established in response to IR 2501498 included updating the TS Bases with the results of a re-evaluation of the single largest load and updating surveillance procedure DOS 6600-12 to account for the acceptance criteria of TSSR 3.8.1.10. The licensee decided to change this procedure as it was considered that the full load rejection test would bound the single largest load KW value and as such accomplish both surveillance requirements. To re-evaluate the largest single load on the EDG post-accident and to account for times when a service water pump may not be available based on outage conditions in the intake structure, the licensee performed Engineering Change (EC) 402550 which looked at the core spray pumps which would always be available during EDG single largest load testing and were of a similar KW rating to the service water pumps. The results of this EC created on July 7, 2015, indicated under certain core flow conditions, a core spray pump could actually be the largest single load with a 725 KW rating. The licensee failed to follow up on the accuracy of this engineering assessment and as such did not complete the corrective actions of updating the TS Bases document or DOS 6600-12. The inspectors noted that the corrective action closure notes indicate that the changes were submitted but a review of the documents clearly indicates they were not implemented. In addition, the licensee continued to perform the deficient single largest load rejection surveillance on the 2/3 EDG in accordance with DOS 6600-03 during Unit 3 refueling outage D3R24 in November 2016 without accounting for less than design post-accident load rejection conditions.

With a concern that the licensee was not adequately testing the EDGs in accordance with the conditions required by TSSR 3.8.1.10, the inspectors looked at the results of several recent full load rejection surveillances of which the licensee believed bounded the single largest load rejection surveillance, and noted that the test results always met acceptance criteria a), usually met acceptance criteria b), and never met acceptance criteria c), as described above. The results for all single largest load rejection tests recently performed in accordance with procedures DOS 6600-03, 04, and 05, always met all three acceptance criteria but were performed not under design post-accident conditions. The compilation of these facts led the inspectors to question the operability of all three EDGs as there was no record of a test which successfully met all of the acceptance criteria of TSSR 3.8.1.10. The licensee responded to the inspectors' concerns by performing OPEVAL 17-002. In this document the licensee assessed the EDGs to be operable, as they extrapolated EDG frequency and voltage response data from full load rejection testing showing that all three acceptance criteria would be met if not for governor and excitation conditions placed on the EDG prior to testing when a full



load is accepted from the electrical grid. Specifically, in order for the EDG to accept real and reactive load from the grid prior to the start of surveillance testing, the voltage and frequency output of the EDG have to be raised. This creates an artificial response once the full load is rejected. In addition, the licensee noted that the single largest load surveillance test results always restored voltage and frequency to the center of the control band within 1–1.5 seconds, well within the 3 and 4 second criteria, at a load approximately 76–83 percent of the design single largest load.

Analysis: The inspectors determined that failing to correct a condition adverse to quality was a performance deficiency that was within the licensee’s ability to foresee and correct. Specifically, since this issue was entered into the licensee’s CAP in May 2015 as IR 2501498, the licensee had the opportunity to correct the issue, but failed to revise the appropriate procedures to ensure the surveillance was performed in accordance with TSSR 3.8.1.10.

The performance deficiency was determined to be more than minor, and thus a finding, in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, “Issue Screening,” dated September 7, 2012, because it was associated with the Mitigating Systems Cornerstone Attribute of Procedure Quality and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to correct a condition adverse to quality associated with the adequacy of the performance of a Technical Specification Surveillance Requirement required an operability determination and engineering assessment be performed to ensure continued operability of the site’s three EDGs.

The inspectors applied IMC 0609, Attachment 4, “Initial Characterization of Findings,” issued October 7, 2016, to this finding. The inspectors answered “No” to all questions within Table 3, “Significance Determination Process Appendix Router,” and transitioned to IMC 0609, Appendix A, “The Significance Determination Process for Findings At- Power,” dated June 19, 2012. The inspectors answered “No” to all questions in Exhibit 2, “Mitigating Systems Screening Questions, Section A: Mitigating SSCs and Functionality.” Therefore, the finding was screened as very low safety significance (Green).

The inspectors concluded that the cause of the finding involved a cross-cutting component in the area of Human Performance, Documentation, in that the licensee did not create and maintain complete, accurate, and up-to-date documentation. Specifically, the licensee utilized surveillance procedures (DOS 6600–03, 04 and 05) that did not ensure that design post-accident conditions were met during testing. In addition, the licensee created CAP actions to make procedure changes to operations surveillance DOS 6600–12 to establish bounding conditions for TSSR 3.8.1.10; however the changes were never included in the relevant procedures. [H.7]

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” requires, in part, that conditions adverse to quality, such as deficiencies, are corrected.

Contrary to the above, from May 15, 2015, through January 27, 2017, the licensee failed to correct a condition adverse to quality. Specifically, the licensee identified in May 2015 during the performance of safety-related surveillance procedures DOS 6600–03, 04, and 05, that environmental and actual plant conditions prevented the load rejected when securing a service water pump from meeting the design single largest load and therefore, was not testing the Unit 2, Unit 3 and Unit 2/3 EDGs at the

worst case design conditions as required by TSSR 3.8.1.10, and the licensee failed to correct this deficiency.

The licensee entered this condition adverse to quality into its CAP in May 2015 as IR 2501498, but closed the corrective action assignments to update the station's surveillance procedures without actions taken. During this period from the licensee's initial identification of the issue until the inspectors concerns were raised, the licensee continued to perform TSSR 3.8.1.10 in a deficient manner on at least one instance in November 2016. In addition, at the time the inspectors raised their concerns there were no open action items in the licensee's CAP to address the deficiency.

The licensee performed OPEVAL 17-002 to demonstrate that the EDGs were capable of rejecting their single largest load and be able to meet the frequency and voltage requirements post load reject of TSSR 3.8.1.10. In addition, corrective actions associated with this OPEVAL include: performing an engineering assessment validating the basis for a service water pump and its KW rating as the single largest load, revising the TS Bases including the results of the engineering assessment, revising surveillance procedures to ensure that the load rejected is greater than or equal to the design single largest load, and performing the single largest load surveillance with updated procedures on the Unit 2 and Unit 2/3 EDGs during refueling outage D2R25 (November 2017) and the Unit 3 EDG during D3R25 (November 2018).

Because this violation was of very low safety significance and because the issue was entered into the licensee's CAP as IR 3964266 and IR 3964435, consistent with Section 2.3.2 of the Enforcement Policy, it is being treated as a NCV.

**(NCV 05000237/2017001-01; 05000249/2017001-001, Failure to Correct a Condition Adverse to Quality Associated with EDG Single Largest Load Rejection Surveillance Testing).**

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- Unit 3 core spray (CS) pump discharge automatic depressurization system (ADS) permissive pressure switch replacement.

The inspectors reviewed the configuration changes and associated Title 10 of the *Code of Federal Regulations* (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 systems. 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:

- Unit 2 station blackout (SBO) diesel following a maintenance window;
- 2B CS pump following time delay relay replacement;
- Unit 3 EDG following work window;
- Unit 2 EDG following work window;
- Unit 3 HPCI following work window; and
- Unit 2 HPCI following work window and emergent repairs to 2–1301–3 steam admission valve.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

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

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 HPCI pump (in-service test);
- Unit 3 low condenser vacuum scram pressure switch calibration (routine); and
- Unit 2/3 SBGT A and B trains operability run (routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and 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, ASME code, and reference values were consistent with the system design basis;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- 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 two routine surveillance testing samples and one in-service test 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 March 8, 2017, 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 the control room 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 71114.06–05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstones: Public Radiation Safety and Occupational Radiation Safety**

2RS5 Radiation Monitoring Instrumentation (71124.05)

.1 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors assessed select portable survey instruments that were available for use for current calibration and source check stickers, and instrument material condition and operability.

The inspectors observed licensee staff demonstrate performance checks of various types of portable survey instruments. The inspectors assessed whether high-range instruments responded to radiation on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. The inspectors compared monitor response with actual area conditions for selected monitors

The inspectors assessed the functional checks for select personnel contamination monitors, portal monitors, and small article monitors to verify they were performed in accordance with the manufacturer's recommendations and licensee procedures.

These inspection activities constituted one complete sample as defined in IP 71124.05–05.

b. Findings

No findings were identified.

.2 Calibration and Testing Program (02.03)

a. Inspection Scope

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

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use and assessed whether check sources were appropriate and aligned with the plant's isotopic mix. The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

Inspectors reviewed select containment high-range monitor calibration and assessed whether an electronic calibration was completed for all range decades, with at least one decade at or below 10 rem/hour calibrated using an appropriate radiation source, and calibration acceptance criteria was reasonable.

The inspectors reviewed select monitors used to survey personnel and equipment for unrestricted release to assess whether the alarm setpoints were reasonable under the circumstances to ensure that licensed material was not released from the site. The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

The inspectors reviewed calibration documentation for select portable survey instruments, area radiation monitors, and air samplers. The inspectors reviewed detector measurement geometry and calibration methods for portable survey instruments and area radiation monitors calibrated on-site and observed the licensee demonstrate use of the instrument calibrator. The inspectors assessed whether appropriate corrective actions were taken for instruments that failed performance checks or were found significantly out of calibration, and that the licensee had evaluated the possible consequences of instrument use since the last successful calibration or performance check.

The inspectors reviewed the current output values for instrument calibrators. The inspectors assessed whether the licensee periodically measured calibrator output over the range of the instruments used with measuring devices that have been calibrated by a facility using National Institute of Standards and Technology traceable sources and corrective factors for these measuring devices were properly applied in its output verification.

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

These inspection activities constituted one complete sample as defined in IP 71124.05-05.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

These inspection activities constituted one complete sample as defined in IP 71124.05-05.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

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

40A1 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 (IE01) performance indicator (PI) for Dresden Nuclear Power Station, Units 2 and 3, for the period from the first quarter of 2016 through the fourth quarter of 2016. 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 Inspection Reports for the period of January 1, 2016, through December 31, 2016, 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 (IE04) performance indicator for Dresden Nuclear Power Station, Units 2 and 3, for the period from the first quarter of 2016 through the fourth quarter of 2016. 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 Inspection Reports for the period of January 1, 2016, through December 31, 2016, 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 Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours (IE 03) performance indicator for Dresden Nuclear Power Station, Units 2 and 3, for the period from the first quarter of 2016 through the fourth quarter of 2016. 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 Inspection Reports for the period of January 1, 2016, through December 31, 2016, 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 Technical Specification/Offsite Dose Calculation Manual (PR-01) radiological effluent occurrences Performance Indicator for the period from the first quarter 2016 through the fourth quarter 2016. The inspectors used Performance Indicator definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 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 Technical Specification/Offsite Dose Calculation Manual radiological effluent occurrences samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

As 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 corrective action program at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action program as a result of the inspectors' observations; however, they are not discussed in 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.

b. Findings

No findings were identified.

.2 Annual Follow-Up of Selected Issues: Review of Corrective Actions Associated with the Results of the Licensee's Nuclear Oversight 2016 Maintenance Audit and Apparent

## Cause Evaluation 2633687 Concerning the Use and Adherence of Information Level Procedures

### a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents, specifically Apparent Cause Evaluation (ACE) 2633687, "2016 NOS Maintenance Audit," and Check-In Assessment Report 2697388, "Check-in: (MS) Level 3 Procedure Usage and Adherence." In addition, the inspectors interviewed maintenance personnel at the manager, supervisor, and craft level; observed quality parts control audits; reviewed CAP documents associated with procedure use and adherence for all departments on site from March 2016 through February 2017; performed plant walkdowns focused on maintenance work areas for proper controls as required by site maintenance and safety information level procedures; and verified the completion of and assessed the adequacy of licensee corrective actions taken in response to deficiencies identified in the Nuclear Oversight (NOS) 2016 Maintenance Audit and ACE 2633687.

The inspectors' review and evaluation was focused on the licensee's corrective actions to ensure they: were complete, accurate, and timely; considered extent of condition; provided appropriate classification and prioritization; provided identification of apparent and contributing causes; were appropriately focused; included action taken which resulted in the correction of the identified problem; identified negative trends; ensured operating experience was adequately evaluated for applicability; and communicated applicable lessons learned to appropriate organizations. The inspectors noted that the licensee's corrective actions adequately addressed deficiencies in the use and adherence of information level procedures by maintenance technicians when performing preventative and corrective maintenance.

This review constituted a single follow-up inspection sample for in-depth review as defined in IP 71152-05.

### b. Background

From February 15 – 26, 2016, NOS performed a Maintenance Audit as required by the licensee's Quality Assurance Topical Report, NO-AA-10. During this assessment, 11 deficiencies were identified in the areas of foreign material exclusion, handling of compressed gas cylinders, control of quality parts, work packages revisions, use of extension cords, use of the correct procedure revision, and the proper verification of qualifications prior to commencing work. As a response to the results of this audit, the licensee performed ACE 2633687 and determined the apparent cause of these deficiencies to be "craft does not consistently utilize informational level procedures and first line supervisors do not consistently correct this inappropriate behavior."

Licensee procedure HU-AA-104-101, "Procedure Use and Adherence," defines the requirements of a Level 3 – Information Use procedure as follows: "an activity may be performed, but the procedure is available, not necessarily at the work location, for use as needed to insure the task is being performed correctly and for training." The deficiencies noted by the audit team were associated with licensee requirements that are derived from Level 3 – Information Use procedures.

In addition, the licensee performed Check-In Assessment Report 2697388 after corrective actions were implemented and approximately six months of performance could be assessed to determine the effectiveness of these corrective actions.

c. Observations

As discussed in the “Inspection Scope” section above, the inspectors’ review was focused on the licensee’s corrective actions in response to deficiencies identified in a quality assurance audit of the maintenance department concerning the use and adherence of Level 3 – Information Use procedures. Corrective actions created by the licensee as a part of ACE 2633687 included performance of at least four paired observations over a three month period, including maintenance managers and first line supervisors focused on “procedure of the week” compliance. In addition, action items were created to perform a “procedure of the week” review where portions of a specific Level 3 – Information Use procedure were discussed at each pre-job brief for that week, covering a different “procedure of the week” for a three month period; each maintenance shop was to develop scenarios enforcing the importance of following Level 3 – Information Use procedures; procedure use and adherence scenarios were to be incorporated into the site’s Safety Corner display; and audit results were to be shared with members of the maintenance department. The licensee’s assessment of these corrective actions in Check-In Assessment Report 2697388, made one additional recommendation for each maintenance shop to review the six Level 3 – Information Use procedures most impacted by the audit results on a six month basis.

The inspectors’ review of the licensee’s corrective actions with regard to control of quality parts verified that all quality and non-conforming parts were being properly controlled in appropriately labeled storage areas and were assigned to a specific work order for future disposition. With regard to other aspects of procedure use and adherence, the inspectors’ review of CAP documents from March 2016 through February 2017 did not identify a negative trend with regards to maintenance performance concerning the procedures most impacted by the NOS audit deficiencies. The inspectors did note potential weaknesses in the future effectiveness of the licensee’s corrective actions. Specifically, the licensee’s Check-In Assessment Report recommendation for each maintenance shop to review the six Level 3 – Information Use procedures most impacted by the audit results on a six month basis contains a specific due date of June 30, 2017. The inspectors were concerned that the licensee would close out this action after the first six month review and not continue to include these procedures in the continuous training program. In addition, the inspectors noted that the “Safety Corner” did not have a display for plant employees to be reminded of appropriate performance standards prior to entering the power block. This was contrary to the licensee’s action item to display procedure use and adherence themes at the “Safety Corner.” Lastly, the inspectors did note a trend in issue reports indicating that panels, components, anchors, and structures, a portion of which are safety-related, were found to be missing screws, bolts, or fasteners. It is not possible to determine if these components were not properly reassembled at their return to service from previous maintenance or were degraded over time, but the extent of condition of issues identified throughout the plant would indicate the potential for some components to have not properly been installed or returned to service following maintenance. The inspectors concerns were entered into the CAP as Issue Report (IR) 3975960.

d. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000237/2016-004-00, "Reactor Building Differential Pressure Less than Technical Specification Requirement."

a. Inspection Scope

On November 8, 2016, at 5:10am during surveillance testing, Bus 33-1 was intentionally de-energized causing standby gas treatment (SBGT) to start and the reactor building (RB) ventilation system to automatically isolate. Main control room (MCR) operators observed RB to outside environment differential pressure (dP) degrade to less than the 0.25 inches water column (in WC) vacuum which is required by Technical Specification (TS) 3.6.4.1, "Secondary Containment." Technical Specification Limiting Condition of Operation (LCO) 3.6.4.1, condition A was entered for Unit 2. At the time of the event the RB equipment access inner door was open to support outage activities, therefore requiring the equipment access outer door to serve as the secondary containment barrier. In response to the loss of secondary containment vacuum, the RB equipment access inner door was closed and RB dP increased above 0.25 in WC vacuum and as a result TS 3.6.4.1 condition A. was exited at 5:32 am. Technical Specification LCO 3.6.4.1 was not applicable to Unit 3 which was in Mode 5 with no recently irradiated fuel moves or any operations with the potential for draining the reactor vessel (OPDRVs) in progress. Following the event, it was identified that the RB equipment access outer door had degraded seals which allowed air flow to enter the RB and cause the loss of secondary containment vacuum.

Corrective actions for this event included repairs to the RB equipment access outer door seal and linkages; a revision to DAP 13-03, "Unit 2 Reactor Building Trackway Interlock Door Access Control," to require work group communication of seal inspection results and name of inspector to operations for documentation in Operation's Logs when closing the RB equipment access doors; validate effectiveness of repairs to the RB equipment access doors after installation of new seals; and review performance of the seals after 6 months of operation.

The licensee reported this event in accordance with 10 CFR 50.73(a)(2)(v)(C), an event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

The inspectors reviewed the licensee's actions in response to the event, the immediate corrective actions, and the licensee's apparent cause evaluation report. Documents reviewed are listed in the Attachment to this report. A finding and violation of NRC requirements was identified and is discussed below.

This License Event Report (LER) is closed.

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

b. Findings

Introduction: A finding of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of Dresden Nuclear Power Station (DNPS) Unit 2 TS 5.4.1, "Procedures ," was self-revealed on November 8, 2016, when RB pressure relative to outside was less than 0.25 in WC vacuum, which is required by TS 3.6.4.1, "Secondary Containment." Specifically, work group personnel did not communicate to operations regarding degraded sealing surfaces on the RB equipment access outer door as required by procedure DAP 13-03, "Unit 2 Reactor Building Trackway Interlock Door

Access Control.” Therefore when standby gas treatment (SBGT) started as a part of a planned surveillance test, vacuum lowered, rendering secondary containment inoperable.

Description: On November 8, 2016, during Dresden Unit 3 Refueling Outage (D3R24), operations performed DOS 6600–03, “Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator to Unit 3.” This test de-energized Bus 33–1, causing RB ventilation to isolate and SBGT to start. When this isolation occurred, MCR operators received an unexpected alarm that RB dP reduced to less than 0.25 in WC vacuum, resulting in loss of secondary containment and entry into TS LCO 3.6.4.1 for Unit 2. The degraded secondary containment dP was verified locally on RB 613’ elevation at the dP meters. No TS entries were required for Unit 3 because the Unit was in Mode 5 with no recently irradiated fuel moves or OPDRV in progress.

Operators identified that the low dP was due to degraded seals on the RB equipment access outer door. Although SBGT is designed to maintain adequate RB dP with the RB equipment access inner door open, the inner door was shut and dogged closed to allow RB dP to return to greater than 0.25 in WC vacuum. The restoration of RB dP by closing the RB equipment access inner door indicated the excessive seal leakage past the outer door seals caused the loss of secondary containment. Licensee procedure DAP 13–03 governs the utilization of the RB equipment access doors to maintain secondary containment integrity. This procedure requires the responsible work group to obtain permission from the Unit Supervisor or Shift Manager when opening the interlock doors and for operators to record permission for door use in the Center Desk Log, to include name of individual receiving authorization for door use. The procedure also requires the responsible working group to inspect the door’s seals upon completion of work or at the end of shift, and if they are in poor condition; keep the door open, post an attendant at door, and notify the Unit Supervisor. Review of Operations Narrative Logs identified the last recorded permission for opening the RB Equipment Access doors was on November 5, 2016, and no documented notifications of degraded outer door seals, from November 1, 2016, through November 8, 2016, could be identified, despite the material interlock being utilized multiple times. On October 28, 2016, RB equipment access outer door was utilized twice by two different work groups. The second work group noted the seals were badly degraded, documenting this with photos. The degradation was not communicated in the CAP or to operations per the procedure, therefore operations was unaware that secondary containment could be challenged by the degraded RB equipment access outer door seals.

Analysis: The inspectors determined that the failure to implement procedure DAP 13–03 to ensure secondary containment integrity is maintained was a performance deficiency that was within Dresden’s ability to foresee and correct and should have been prevented. The performance deficiency was determined to be more than minor, and thus a finding, in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, “Issue Screening,” dated September 7, 2012, because it was associated with the Barrier Integrity Cornerstone Attribute of Human Performance and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (secondary containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the drop in secondary containment dP to less than 0.25 in WC vacuum, resulted in a loss of secondary containment and a failure of its safety function as specified by TS 3.6.4.1 and Updated Final Safety Analysis Report (UFSAR) section 6.2.3.

The inspectors applied IMC 0609, Attachment 4, “Initial Characterization of Findings,” issued October 7, 2016, to this finding. The inspectors answered “No” to all questions

within Table 3, "Significance Determination Process Appendix Router," and transitioned to IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. The inspectors reviewed the Barrier Integrity Screening Questions in Appendix A, Exhibit 3 and answered "Yes" to question C.1. As a result, the finding was determined to have very low safety significance (Green).

This finding had a cross cutting aspect in the area of Problem Identification and Resolution, Identification, because individuals failed to identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, the licensee did not report a condition adverse to quality with regards to degraded seals on the RB Equipment Access outer door to operations as required by procedure DAP 13-03. Therefore secondary containment integrity was not ensured. [P.1]

Enforcement: Dresden Nuclear Power Station (DNPS) Unit 2 TS 5.4.1, "Procedures," requires that written procedures be implemented for activities recommended in Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)," Appendix A, Revision 2. Regulatory Guide 1.33 requires, in part, implementing procedures for maintaining the integrity of the secondary containment. Licensee procedure DAP 13-03, "Unit 2 Reactor Building Trackway Interlock Door Access Control," requires that work group personnel inspect door seals and notify supervisors of degraded seals to ensure secondary containment integrity is maintained.

Contrary to the above, from October 28 through November 8, 2016, the licensee did not comply with procedure DAP 13-03 and failed to ensure secondary containment integrity. Specifically, the licensee did not notify the Unit Supervisor when significant seal degradation was identified as early as October 28, 2016. The condition was not corrected and the interlock configuration was manipulated to support plant activities, which resulted in a loss of secondary containment integrity.

Corrective actions to address this issue included immediately closing the RB equipment access inner door and reestablishing RB differential pressure above 0.25 in WC vacuum and secondary containment integrity. Subsequent corrective actions for this event included repairs to the RB equipment access outer door seal and linkages; a revision to DAP 13-03, "Unit 2 Reactor Building Trackway Interlock Door Access Control," to require work group communication of seal inspection results and the name of the inspector to Operations for documentation in operation's Logs when securing the RB equipment access doors; validation of effectiveness of repairs to RB equipment access doors after installation of new seals, and a review of seal performance after six months of operation.

Because this violation was of very low safety significance and it was entered into the licensee's CAP as IR 2738559, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000237/2017001-02, Secondary Containment Inoperability Due to Lapse in Procedure Use and Adherence**).

.2 (Closed) Licensee Event Report 05000237;05000249/2016-003-00, "Control Room Emergency Ventilation System Charcoal Filter Bank Failure to Meet the Methyl Iodide Penetration Acceptance Criteria"

a. Inspection Scope

On September 19, 2016, test results were received indicating that a sample from the upstream charcoal filter bank of the control room emergency ventilation (CREV) system, which had been removed for testing on September 12, 2016, had a methyl iodide

penetration of 0.65 percent which is greater than the permissible  $\leq 0.5$  percent criterion of Technical Specification 5.5.7, "Ventilation and Filter Testing Program." The licensee appropriately entered Technical Specification 3.7.4.A for the CREV system, a 7 day allowed outage time action statement, at the time of discovery of the deficient condition. The licensee replaced the deficient charcoal bed, performed acceptance testing and exited Technical Specification 3.7.4.A on September 20, 2016. The licensee reported this condition via an LER because the time between original sampling and the replacement of the charcoal bed exceeded 7 days. Successful testing results for the downstream charcoal filter bed indicated that the safety function of the CREV air filtration unit was maintained.

Corrective actions for this event included replacing the upstream bank of activated charcoal and testing to ensure acceptance criteria were met for the CREV system. In addition, all other charcoal filtration banks on-site were verified to have passed performance testing satisfactorily.

The licensee reported this event in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's Technical Specifications.

The inspectors reviewed the licensee's actions in response to the event, the immediate corrective actions, and the licensee's special plant condition report. Documents reviewed are listed in the Attachment to this report.

This LER is closed.

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

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Component Design Bases Inspection (71111.21)

Closed Unresolved Item 5000237/2013007-05; 05000249/2013007-05, Failure to Provide Complete and Accurate Information on the Isolation Condenser When Improved Technical Specification was Submitted

a. Inspection Scope

During the 2013 Component Design Bases Inspection, the inspectors identified an Unresolved Item (URI) regarding inaccurate information provided to the U.S. Nuclear Regulatory Commission (NRC) (URI 5000237/2013007-05; 05000249/2013007-05, Failure to Provide Complete and Accurate Information on the Isolation Condenser When Improved Technical Specification was Submitted). Specifically, in a letter dated March 3, 2000, the licensee requested the NRC to approve a license amendment to upgrade to Improved TS. The proposed change included adding explicit values for the isolation condenser (IC) minimum starting shell side water level and maximum starting water temperature. The previous version of the TS had no explicit values listed, so the limits were administratively controlled by the licensee. As a result, the proposed change was intended to be more restrictive on plant operation. The inaccurate information was included as part of the above mentioned letter under Enclosure A, "Dresden Improved Technical Specifications Conversion Document," Volume 5. Specifically, the basis for TS Surveillance Requirements 3.5.3.1 stated, in part:

“Based on a scram from 2552.3 MWt (101 percent RTP), a minimum water level of 6 feet at a temperature of  $\leq 210^{\circ}\text{F}$  in the condenser provides sufficient decay heat removal capability for 20 minutes of operation without makeup water, **before beginning to uncover the tube bundles** [emphasis added]. The volume and temperature allow sufficient time for the operator to provide makeup to the condenser.”

However, at the time of the March 3, 2000, submittal the licensee had already determined via calculation (BSA-D-95-07, “Dresden Isolation Condenser Performance”), that while performing its function the IC tubes would become uncovered during the first 20 minutes of operation.

A separate but related concern regarding the uncovering of the IC tubes was reviewed and dispositioned by the inspectors as a separate violation (Non-Cited Violation (NCV) 05000237/2013007-04; NCV 05000249/2013007-04, “Failure to Ensure Isolation Condenser Would Perform Its Safety-Related Function Under Design Conditions”). As corrective actions to this violation the licensee developed additional calculations and engineering evaluations. Based on these products the licensee determined the IC could still perform its safety functions even while some of the IC tubes would become uncovered. As a result the licensee did not need to request a license amendment to change the IC TS setpoints.

In order to resolve the concern identified in the URI the inspectors obtained assistance from the Office of Nuclear Reactor Regulation to review these new calculations and evaluations. In addition, the inspectors obtained support from the regional counsel and the regional Enforcement Investigations and Coordination Staff. Based on these reviews, the guidance provided in NRC’s Enforcement Manual Section 1.5 and the guidance from NRC’s Enforcement Policy section 2.3.11, no additional violations of NRC requirements were identified; therefore, this URI is closed.

b. Findings

No findings were identified.

.2 (Closed) NRC Temporary Instruction 2515/192, “Inspection of the Licensee’s Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems”

a. Inspection Scope

The objective of this performance based Temporary Instruction (TI) is to verify implementation of interim compensatory measures associated with an open phase condition (OPC) design vulnerability in electric power system for operating reactors. The inspectors conducted an inspection to determine if the licensee had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for OPC design vulnerability. The inspectors verified the following:

- The licensee had identified and discussed with plant staff the lessons-learned from the OPC events at the US operating plants including the Byron station OPC event and its consequences. This includes conducting operator training for promptly diagnosing, recognizing consequences, and responding to an OPC event.



- The licensee had updated plant operating procedures to help operators promptly diagnose and respond to OPC events on off-site power sources credited for safe shutdown of the plant.
- The licensee had established and continue to implement periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible OPC.
- The licensee had ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, the licensee assessed and managed plant risk in accordance with 10 CFR 50.65(a) (4) requirements.

b. Findings and Observations

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 7, 2017, the inspectors presented the inspection results to Mr. J. Washko, 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:

- An interim exit was conducted on January 13, 2017, the inspector presented the Component Design Bases Inspection URI inspection results to Mr. B. Franzen, Regulatory Assurance Manager.
- The inspection results for the Radiation Safety Program review with Mr. P. Hansett, Acting Plant Manager, took place on March 3, 2017.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

P. Karaba, Site Vice President  
J. Washko, Station Plant Manager  
L. Antos, Manager Site Security  
R. Bauman, Shift Operations Superintendent  
M. Budelier, Senior Engineering Manager  
H. Bush, Acting Radiation Protection Manager  
J. Condreay, Operations Training Instructor  
T. Dean, Director, Site Training  
D. Doggett, Emergency Preparedness Manager  
B. Ehnert, Work Control Manager  
B. Franzen, Regulatory Assurance Manager  
F. Gogliotti, Director, Site Engineering  
P. Hansett, Work Control Director  
K. Kretsinger, Security Operations Supervisor  
S. Matzke, Corrective Action Program Coordinator  
A. McMartin, Manager Site Chemistry, Environment & Radwaste  
G. Morrow, Operations Director  
M. Pavey, Senior RP Tech Specialist  
J. Quinn, Director, Site Maintenance  
W. Remiasz, Outage Manager  
R. Ruffin, Chemistry Supervisor  
B. Sampson, OR Manager  
R. Sisk, Corrosion Control Program Coordinator  
D. Thomas, Training Manager  
D. Walker, Regulatory Assurance – Senior NRC Coordinator

#### U.S. Nuclear Regulatory Commission

J. Cameron, Chief, Division of Reactor Projects, Branch 4

#### IEMA

M. Porfirio, Resident Inspector, Illinois Emergency Management Agency  
L. Torres, ASME Inspector, Illinois Emergency Management Agency

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

|  |     |   |
|--|-----|---|
| 05000237/2017001-01<br>05000249/2017001-01 | NCV | Failure to Correct a Condition Adverse to Quality Associated with EDG Single Largest Load Rejection Surveillance Testing (1R15) |
| 05000237/2017001-02                        | NCV | Secondary Containment Inoperability Due to Lapse in Procedure Use and Adherence(4OA3)   |

### Closed

|   |     |   |
|---|-----|---|
| 05000237/2017001-01<br>05000249/2017001-01  | NCV | Failure to Correct a Condition Adverse to Quality Associated with EDG Single Largest Load Rejection Surveillance Testing (1R15)                               |
| 05000237/2017001-02                         | NCV | Secondary Containment Inoperability Due to Lapse in Procedure Use and Adherence(4OA3)   |
| 05000237/2016004-00                         | LER | Reactor Building Differential Pressure Less than Technical Specification Requirement (4OA3.1)   |
| 05000237/2016003-00<br>05000249/2016003-00  | LER | Control Room Emergency Ventilation System Charcoal Filter Bank Failure to Meet the Methyl Iodide Penetration Acceptance Criteria (4OA3.2)                     |
| 05000237/2013007-05;<br>05000249/2013007-05 | URI | Failure to Provide Complete and Accurate Information on the Isolation Condenser When Improved Technical Specification was Submitted (4OA5.1)                  |
| Temporary Instruction<br>2515/192           | TI  | Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (4OA5.2) |

### Discussed

|  |     |  |
|--|-----|--|
| 05000237/2013007-04<br>05000249/2013007-04 | NCV | Failure to Ensure Isolation Condenser Would Perform Its Safety-Related Function Under Design Conditions (4OA5.1) |
|--|-----|--|

## 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

- IR 3979790, "Unexpected Alarm, DOA and DEOP Entry"
- IR 3979631, "NRC Walkdown of Site in Preps for Severe Weather"
- IR 3961385, "Entered DOA 0010-02, Tornado Warning – Severe Winds"
- IR 3961374, "Unexpected Alarm: RX Building dP LO"
- DOA 0010-02, "Tornado Warning/Severe Winds," Revision 22
- DOA 0800-01, "Spent Fuel Cask Abnormal Conditions," Revision 14
- OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines," Revision 15
- Operations Log for 02/28/2017 15:00 through 03/01/2017 12:10
- National Weather Service Watches, Warnings & Advisories for Lisle, IL 440 AM CST Tuesday 2/28/2017

### 1R04 Equipment Alignment

- IR 3945130, "3B Core Spray Inoperable Due to Blown Close Fuses (BKR 3-67341-9)"
- IR 3947000, "OOT 2-1459-A Core Spray Header Found During WO 1953814-01"
- IR 2719721, "U2 CS Header dP Are Approximately 25 PSI Apart"
- DOP 1400-E1, "Unit 2 Core Spray System Electrical Checklist," Revision 04
- DOP 1400-M1, "Unit 2 Core Spray System," Revision 24
- Drawing: 20901-001, Core Spray Subsystem, Revision 2
- Drawing: M-27, Diagram of Core Spray Piping, Revision AA
- DOP 6600-01, "Diesel Generator 2(3) Preparation for Standby Operation," Revision 32
- DOP 6600-E1, "Unit 2 Standby Diesel Generator," Revision 04
- DOP 6600-E2, "Unit 2/3 Standby Diesel Generator," Revision 06
- DOP 6600-M1, "Unit 2 Standby Diesel Generator," Revision 29
- Drawing: 262LN001-001, AC Distribution, Revision 2
- Drawing: 262LN001-002, 4KV & 480V Buses, Revision 2
- IR 3984617, "NRC Identified Buzzing of Solenoid"
- IR 3984623, "NRC Identified Issue With DOP 1300-M1-E1"
- DOP 1300-M2, "Unit 2/3 Isolation Condenser Makeup Pump Fuel Oil System," Revision 03
- DOP-M1/E1, "Unit 3 Isolation Condenser System Checklist," Revision 25
- Drawing: M-359, Diagram of Isolation Condenser Piping, Revision BQ

### 1R04 Equipment Alignment (System)

- IR 3981135, "NRC Concern DOP 1500-M1/E1 Items"
- IR 3986478, "DRE-EP-2017-PREX-Station F&E"
- IR 3976477, "DRE-EP-2017-PREX-Station EM&SC"
- IR 3986475, "DRE-EP-2017-PREX-OSC-Other Issues"
- IR 3986472, "DRE-EP-2017-PREX-TSC-Other Issues"
- IR 3986467, "DRE-EP-2017-PREX-SIM-Other Issues"
- IR 3986464, "DRE-EP-2017-PREX-TSC-Failed DCS"
- IR 3986459, "DRE-EP-2017-PREX-OSC-Failed DCS"
- IR 3986453, "DRE-EP-2017-PREX-SIM-Failed DC's"
- IR 3975406, "2-1599-155 Valve Leak By"
- IR 3961709, "SFCP Change for DIS 1500-20 and DIS 1500-28"

- IR 3959897, "2B LPCI Heat Exchanger Thermal Performance"
- IR 2719072, "2C LPCI Pump Motor Cooling Line Unions Leaking"
- IR 2704085, "U2 Torus LPCI Loop I Ring Header Drain Pipe Corroded"
- IR 2687243, "2B LPCI Heat Exchanger Thermal Performance Test"
- IR 2685054, "2B CCSW Pump Inner Seal Issue"
- IR 2671594, "Aux Contact Configuration"
- IR 2678369, "2-1501-5C Diagnostic Testing"
- IR 2667279, "Peach Bottom LER 3-15-001 (Signal Converter Failure)"
- IR 2645841, "2C CCSW Room Cooler Vent Line Plugged"
- IR 2635727, "Damaged Wire Insulation on 2-1530-183 Relay"
- DOP 1500-01, "Preparation of Low Pressure Coolant Injection for Automatic Start,:"  
Revision 16
- DOP 1500-E1, "Unit 2 LPCI and CCSW Electrical Checklist," Revision 14
- DOP 1500-M1, "Unit 2 LPCI and Containment Cooling Valve Checklist," Revision 48
- Drawing: M-29, Diagram of LP Coolant Injection Piping, Sheet 1, Revision CP
- Drawing: M-29, Diagram of LP Coolant Injection Piping, Sheet 2, Revision BI
- Drawing: 20300-005, LPCI Physmatic, Revision 0
- Drawing: 203LN001-001, LPCI System and Instrumentation, Revision 01
- Drawing: 203LN001-002, LPCI Initiation Logic, Revision 01
- Drawing: 203LN001-003, LPCI LOOP Select Logic, Revision 01

#### 1R05 Fire Protection

- Dresden Pre-Fire Plan for FZ 11.2.1
- Dresden Pre-Fire Plan for FZ 11.2.3
- Design Analysis DRES97-0105, "Determination of Combustible Loading," Revision 9
- Dresden Pre-Fire Plan for FZ 1.1.1.6
- Dresden Pre-Fire Plan for FZ 1.1.2.6

#### 1R06 Flooding

- WO 01834730, "Perform Piping Inspections on Unit 2/3 Buried Piping for the Raw Water Corrosion Program"
- WO 01773114, "D3 AN Perform UT Inspections of Piping for Balance of Plant (BOP) Service Water"
- WO 01564482, "Degraded Unit 2 BOP Service Water Piping 2B TBCCW [Turbine Building Cooling Water] HX"
- WO 00405380, "Degraded Unit 2 BOP Service Water Piping"
- IR 3978137, "NRC Question About ACMP #2692890"
- IR 2732374, "Degraded Unit 2 Service Water Piping"
- IR 2716225, "Work Required for Replacement of Unit 3 Div I CCSW Piping"
- IR 2714366, "Water Back Weld Was Not to Standard When Verified"
- IR 2714119, "The Bathymetric Survey Letter Report Deficiencies"
- IR 2712155, "Update to IR 2705211 – U3 Standby Coolant Line Leak"
- IR 2707691, "Inconsistency Identified in the UFSAR"
- IR 2705211, "Potential SW Pipe Leak on U3 TB 549"
- IR 2692890, "GSCAN Results Show Degradation of Common SW Header"
- IR 2669815, "Piping Broke Off in 2-3941-8016B-SV During Hang of CO"
- IR 2647313, "Through Wall Leak Downstream of 3-3924-501"
- IR 2611479, "Degraded Material Condition in 2/3 Cribhouse"
- DOA 0040-02, "Localized Flooding in Plant," Revision 26
- DOP 3900-01, "Service Water System Operation," Revision 54
- DOS 1500-21, "CCSW Pump Vault Watertight Door Leak Test," Revision 01
- DOS 4400-01, "Containment Cooling Service Water Vault Floor Drain," Revision 13
- DR PSA-012, "Internal Flooding Evaluation," Revision 3

- CY-AA-120-4110-F-04, "Dresden Raw Water Treatment and Control," Revision 4
- ER-AA-5400-1001, "Raw Water Corrosion Program Guide," Revision 9
- ER-AA-5400-1003, "Buried Pipe and Raw Water Corrosion Program (BPRWCP) Performance Indicators," Revision 10
- OP-AA-108-111, "Adverse Conditioning Monitoring and Contingency Plan," Revision 10
- Surveillance history for the following systems:
  - D3 4Y COM CCSW Vault Door;
  - D2 REFUEL (RFL) TSTR CDSR PIT HI/HI WTR LVL 2A Circ Wtr PP Trip LSFT;
  - D2 18M TRST CCSW PMP VAULT DRAIN LINE CHK VLV LEAK TEST;
  - D3 18M TSTR CCSW PMP VAULT DRAIN LINE CHK VLV LEAK TEST;
  - D2/3 AN COM INSPECTIONS OF BURIED PIPING;
  - D2 AN PERFORM UT INSPECTIONS OF PIPING FOR BOP SERVICE WATER SYS;
  - D3 AN PERFORM UT INSPECTIONS OF PIPING FOR BOP SERVICE WATER SYS
- Drawing: M-22, Diagram of Service Water Piping, Revision ER
- Drawing: 27600-001, Service Water System, Revision 03

#### 1R07 Annual Heat Sink Performance (71111.07)

- IR 3994481, "NRC Question DGCW Pump GPM"
- IR 3983847, "Unit 2 EDG Cooling Water Heat Ex Inspection Summary"
- IR 3982721, "TE 2-6641-501 & TE 2-6641-520 Not Reading on TI 2-6641-500"
- IR 3982569, "TI 2-6641-500 Does Not Repeat/Won't CAL/EC's Cancelled"
- IR 3982258, "D2 EDG Engine Cooling Water Temperature Switch (ETS) OOT"
- WO 1710218-01, "2A Diesel Generator Engine Cooling Water HX 2-2669-A"
- WO 1709945-01, "2B Diesel Generator Engine Cooling Water HX 2-2669-B"
- DTP 75, "Heat Exchanger Inspection Program," Revision 00
- ER-AA-335-038, "Examination of Non-Magnetic Heat Exchanger Tubing," Revision 3
- ER-AA-340-1002, "Service Water Heat Exchanger Inspection Guide," Revision 6
- Calculation ATD-0400, "Unit 2/3 Diesel-Generator Jacket Water Cooler Capacity," Revision 0
- Calculation ATD-0400, "Unit 2/3 Diesel-Generator Jacket Water Cooler Capacity," Revision 000D
- Eddy Current Results: 2017-03 Project, "2A and 2B Diesel Gen. Jacket Water Clr"

#### 1R11 Licensed Operator Regualification Program

- IR 3971859, "Inadequate Work Package Preparation and Review"
- IR 3971851, "Unexpected Alarm 903-1 B-5, Turbine Control Minor Trouble"
- DGP 03-01, "Power Changes," Revision 132
- Reactivity Maneuver Approval for Plan # D325-004
- Flow control line rod move sheet -Unit 3

#### 1R12 Maintenance Effectiveness

- IR 3966157, "NRC Resident Question - RBCCW Tube Plugging"
- IR 3963526, "3B RBCCW HX Partition Plate is Cracked"
- Eddy Current Results: 2016-12 Project, 2A RBCCW 2-3702-A
- Eddy Current Results: 2012-09 Project, 2B RBCCW 2-3702-B
- Eddy Current Results: 2016-02 Project, 2/3 RBCCW 2/3702
- Eddy Current Results: 2017-01 Project, 3A RBCCW 3-3702-A
- Eddy Current Results: 2017-01 Project, 3B RBCCW 3-3702-B
- Maintenance Rule Basis Document for RBCCW, Function # 37-2 and 37-1
- DTP 75, "Heat Exchanger Inspection Program," Revision 00
- DRES208LN001, Dresden Operations Training, "RBCCW System," Revision 03
- Drawing: 20800-001, Reactor Building Closed Cooling Water, Revision 0
- WO 01905270-01, "MM D2 3Y PM 2A Inst Air Compressor Overhaul"

- WO 01898957-01, "MM D3 3Y PM Insp & Maintenance on 3B Inst Air Compressor"
- IR 3978244, "U2 Inst Air Pressure Low, Enter DOA 4700-01"
- IR 3977509, "EC 406174 Non-Procedural Compliance"
- IR 2729236, "2A IAC Controller Software"
- IR 2728766, "2A IAC Controller Not Responding as Expected"
- IR 2548524, "Entered DOA 4700-01 (Instrument Air System Failure)"
- IR 2728022, "2A IAC Unloading Abnormally"
- IR 2544491, "2A IAC Failed PMT Following Troubleshooting"
- IR 2543939, "2A IAC Sounds Abnormal When Loading"
- IR 2543188, "2A IAC Sounds Abnormal When Loading"
- IR 1649736, "2A IAC Trip"
- DOA 4700-01, "Instrument Air System Failure," Revision 52
- ER-AA-310-1004, "Examples of Functional Failures," Revision 13
- MA-DR-MM-5-47002, "18 Month Inspection and Preventive Maintenance on Atlas Copco ZR90Air Compressors (2A IAC)," Revision 01
- Maintenance Rule History for Instrument Air

### 1R13 Maintenance Risk Assessments and Emergent Work Control

- DIS 7500-04, "Standby Gas Treatment System Effluent Flow Transmitter Channel Calibration and EQ Maintenance Inspection," Revision 17
- OP-AA-108-117, "Protected Equipment Program," Revision 4
- WC-AA-101-1006, "On-Line Risk Management and Assessment," Revision 2
- Drawing: 26100-001, Standby Gas Treatment, Revision 04
- Drawing: 26100-002, Containment Venting, Revision 03
- IR 3983612, "IEMA Inspector Question"
- DOP 6500-02, "Transfer of Unit 1 Loads From TR 12 to TR 13," Revision 27
- Protected Equipment List for U3 Div I LPCI
- Protected Equipment List for U3 Isolation Condenser
- Protected Equipment List for U3 345 KV Switchyard
- Protected Equipment List for U3 Div 2 Core Spray
- Protected Equipment List for U3 Div 1 Core Spray
- Protected Equipment List for U3 ADS
- Protected Equipment List for Div II LPCI
- IR 3987453, "NRC Identified Transient Combustibles in RMA Zone"
- OP-AA-108-117, "Protected Equipment Program," Revision 4
- OP-DR-201-012-1001, "Dresden On-Line Fie Risk Management," Revision 04
- XL Fire Detection System Status Report for Mar 21, 2017
- Protected Equipment List for Unit 2 ADS
- Protected Equipment List for Unit 2 Div I LPCI
- Protected Equipment List for Unit 2 Div II LPCI
- Protected Equipment List for Unit 2 Div 1 Core Spray
- Protected Equipment List for Unit 2 Div 2 Core Spray
- Protected Equipment List for Unit 2 Isolation Condenser
- Protected Equipment List for Unit 2/3 345 KV Switchyard
- DOP 6400-08; 345 KV Voltage Control; Revision 38
- WO 04587381-01, "D2 QTR TS HPCI Pump Oper Test and IST Surv."
- WO 04587200-01, "D2 Qtr Com HPCI Turbine Lube Oil Reservoir-Draw Lab Anal"
- WO 04583509-01, "D2 QTR TS HPCI Motor Operated Valve (MOV) Operability Surv"
- WO 01932243-02, "Work Order Needed for Unit 2 HPCI Piping Replacement"
- WO 01911802-01, "D2 NDD HPCI System Venting / Backfill / UT"
- WO 01817935-01, "D2 2YR Seat Leakage Test 2301-76 & 2301-79 Valves"
- WO 01642438-02, "D2 6Y COM MOV Diagnostic Testing & Limitorque Surv 2-2301-9"
- WO 01627632, "D2 4Y PM Insp/Maint HPCI Armstrong Stm Trap"
- WO 01624299-02, "D2 4Y COM Lube VLV Stem, Threads Only 2-2301-10"

- WO 01420891-02 and -03, "D2 6Y PM Insp/OH/Repl Diaphragm; Adj Feq if Nec 2-2301-29"
- WO 01321530-02 and -03, "D2 6Y PM 250VDC BKR 2301-10 HPCI Bypass to CST"
- WO 00684791-02, "D2 12Y PM INSP and Repair HPCI Turning Gear - Mech"
- DOP 2300-02, "HPCI System Turning Gear Operation," Revision 10
- DOS 0040-07, "Verification of Remote Position Indication for Valves Included in Inservice Testing (IST) Program," Revision 45
- DOS 7100-147, "IST Seat Leakage Testing of Valve 2(3)-2301-76," Revision 07
- DOS 2300-01, "High Pressure Coolant Injection Valve Operability and Timing," Revisions 52 and 57
- DOS 2300-03, "High Pressure Coolant Injection System Operability and Quarterly IST Verification Test," Revision 112

### 1R15 Operability Determinations and Functional Assessments

- IR 1427366, "Computer Point C262 and Isolator 2-0263-15B Found O.O.T."
- IR 1427362, "Found LR2-0640-27 Channel 3 O.O. T/Not Tech Spec"
- IR 1427357, "LT 2-0263-73B Found O.O.T. Not Tech Spec"
- IR 1348871, "LI 2-0263-106A Found Out of Tolerance"
- IR 3952653, "Fuel Zone Level Scaling Error - Spray Interlock and Indication"
- EC 351222, "Evaluate the Technical and Regulatory Acceptability for the Difference in Indicated and Actual Water Levels When the Reactor Coolant is Not at Hot Conditions," Revision 0
- ECR 428068, "Requesting the Acceptability of Supporting the Scaffold for the Unit 3 CCSW Line, 3-1514-16" in Order to Provide Support When Cutting Out/Replacing 45 Degree Elbow Identified Leaking"
- Technical Evaluation for EC 351222, Revision 0
- Design Analysis DRE15-0015, "Dresden Emergency Operating Procedure (DEOP) Appendix C Calculations," EC 393280, Revision 00
- DIS 0263-02, "Reactor Vessel Two-Thirds Core Height Level Transmitter Channel Calibration and EQ Maintenance Inspection," Revision 30
- DEOP 0010-00, "Guidelines for Use of Dresden Emergency Operating Procedures and Severe Accident Management Guidelines," Revision 14
- WO 99062759, "D2 22Y EQ REPL RX Level 2/3 Core Height CS Interlock
- WO 01583635, "D2 2YR TS/EQ RX LVL CS INTLK Xmtr 2/3 Core Height Chan Cal/EQ"
- Calculation No. NED-I-EIC-0284, "Calibration Scaling Calculation for ATWS, Reactor Vessel Two-Thirds Core Height Level and Reactor Vessel Narrow Range Level (Feedwater Control) Instrument Loop Transmitters"
- NRC Bulletin 93-03: "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs [Boiler Water Reactor]"
- Surveillance History for D2 2YR TS/EQ RX LVL CS INTLK XMTR 2/3 Core HGHT CHAN CAL/EQ INSP
- Surveillance History for D2 22Y EQ Replace Transmitter
- Drawing: 203LN001-001, Low Pressure Coolant Injection (LPCI) System and Instrumentation, Revision 01
- Drawing: 12E-2437, Schematic Diagram LPCI/Containment Cooling System 1, Revision AZ
- Drawing: 12E-6822, "LOOP Schematic Functional Block Diagram Analog Trip System Class 1E Instrumentation Upgrade, Revision AD
- Engineering Change (EC) 617316, "Evaluate Compliance with TSSR 3.8.1.10 With Guidance From TSB 3.8.1.10 for Unit 2, Unit 3, and Unit 2/3 Diesel," Revision 0000
- Operability Evaluation 17-002 for IR 3964266 and EC Number 617930, Revision 000
- Technical Evaluation for EC 702550, "Evaluate Using Core Spray Pump for EDG Largest Single Load Reject Test," Revision 000
- CC-AA-402, "Maintenance Specification: Installation of Temporary Rigging," Revision 5
- DOS 6600-03, "Bus Undervoltage and ECCS Integrated Functional Test for Unit 2/3 Diesel Generator to Unit 3," Revision 42



- DOS 6600–12, “Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart,” Revision 62
- QCOS 6600–37, “Unit One Emergency Diesel Generator Largest Load Reject Surveillance,” Revision 32
- Operations Log 01/25/2017 17:35
- IR 3968275, “Question Regarding EDG Under Voltage Test Freq for Div 1”
- IR 3964435, “DOS 6600–12 Not Revised per ACIT”
- IR 3964266, “NRC Question Concerning TS SR 3.8.1.10 and 3.8.1.11”
- IR 2501498, “TSSR 3.8.1.10: EDG Largest Load Reject”
- IR 1442072, “2/3 EDG Voltage Behavior During DOS 6600–03”
- IR 1444911, “DG 2/3 DOS 6600–03 Degraded Voltage”
- IR 0992803, “U2 EDG Largest Load Reject (TSR 3.8.1.10)”
- IR 0969752, “DOS 6600–12 Unit 3 EDG KVARs Outside the Band”
- IR 0486317, “Note in DOS 6600–12 for AC For Full Load Rej. Test is Vague”
- Surveillance History for D2 48M/RFL TS Bus 24–1 UV and ECCS Integrated Func Test”
- Surveillance History for D2 48M/RFL TS Bus 23–1 UV and ECCS Integrated Func Test”
- Surveillance History for D2 48M/RFL TS Bus 33–1 UV and ECCS Integrated Func Test”
- Surveillance History for D2 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01710139, “D2 48M/RFL TS Bus 23–1 UV and ECCS Integrated Func Test”
- WO 01706138, “D3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS,” and Strip Chart Data
- WO 01706528, “D2/3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS,” and Strip Chart Data
- WO 01635025, “D2 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS,” and Strip Chart Data
- WO 01597351, “D3 24M/RFL TS Bus 34–1 UV and ECCS Integrated Func Test,” and Strip Chart Data
- WO 01595097, “D3 24M/RFL TS Bus 33–1 UV and ECCS Integrated Func Test”
- WO 01507377, “D3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01489071, “D2 2Y/RFL TS Bus 24–1 UV and ECCS Integrated Func Test,” and Strip Chart Data
- WO 01466881, “D2/3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01429952, “D2 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01389552, “RFL TS Bus 34–1 UV and ECCS Integrated Func Test”
- WO 01386793, “RFL TS Bus 34–1 UV and ECCS Integrated Func Test”
- WO 01295487, “D2 RFL TS Bus 24–1 UV and ECCS Integrated Func Test”
- WO 01295474, “D2 RFL TS Bus 23–1 UV and ECCS Integrated Func Test”
- WO 01186399, “D3 48M/RFL TS Bus 34–1 UV and ECCS Integrated Func Test”
- WO 01186363, “D3 24M/RFL TS Bus 33–1 UV and ECCS Integrated Func Test”
- WO 01218927, “D2/3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01078494, “D2 2YR/RFL TS Bus 24–1 UV and ECCS Integrated Func Test”
- WO 01069226, “D3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 01022626, “D2 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 00804478, “D2/3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 00693836, “D3 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- WO 00635087, “D2 24M TS Bus 24–1 UV and ECCS Integrated Func Test”
- WO 00555787, “D3 24M/RFL TS Bus 33–1 UV and ECCS Integrated Func Test”
- WO 00511726, “D2 24M TS D/G Test/Endur & Margin/Full Load Rej/ECCS”
- Design Information Transmittal 000626055, “Emergency Diesel Generator 2/3 & 3 Loading in Support of DOS 6600–03 & 04 Testing”
- Surveillance Test Interval (STI) Change Request DRE14–003, Revision 1
- WO 01800945, Single Largest Load Reject, Strip Chart Data
- Operator Log for the Period of 01/29/2017 11:00 through 01/29/2017 16:24

- Drawing: 12E-3345, Schematic Diagram 4160V Bus 33-1 4KV Switchgear Bus 40 Fed Breaker, Revision AW
- Drawing: 12E-3345, Schematic Diagram 4160V Bus 33-1 Undervoltage Relays Control Switch Development, Revision AO
- Drawing: 12E-3330, Synchronizing Diagram, Revision R
- IR 3987156, "Through Wall Pipe Leak on CCSW Line 3-1514-16"
- Safety Function Determination Program # 17-03-001, "3A and 3B CCSW Pumps"
- OP-AA-108-115, "Operability Determinations (CM-1)," Revision 19
- Vertical Sketch Sheet for ER-AA-335-004, Revision. 7, Report Number: 17-052
- Ultrasonic Thickness Calibration Sheet for ER-AA-335-004, Revision. 7
- Operations Log for the period 03/20/2017 13:55 and 03/21/2017 01:20
- Drawing: M-360, Diagram of L.P. Coolant Injection System, Revision VW
- Drawing: M-360, Diagram of L.P. Coolant Injection Piping, Revision BH
- EC 617772, "2B LPCI Heat Exchanger Thermal Performance Evaluation," Revision 0
- EC 377036, "2A LPCI Heat Exchanger September 18, 2009 Thermal Performance Test"
- IR 3985670, "2B LPCI Heat Exchanger Inspection/Cleaning Results"
- IR 3972658, "Potential Operator Work-Around"
- IR 3959897, "2B LPCI Heat Exchanger Thermal Performance"
- DTS 1500-05, "Containment Cooling Heat Exchanger Thermal Test Data," Revision 11
- Operability Evaluation of EC 617759, Revision 0
- Pre-Job Brief for 2B LPCI Heat Exchanger Thermal Performance Evaluation
- Operation Log for the period of 01/17/2017 16:24
- Operation Log for the period of 12/10/2017 13:05 through 12/10/2017 13:54
- Minutes from PORC Meeting for Op Eval 17-001

#### 1R18 Plant Modifications

- Engineering Change 405901, "3-1466-B and D Core Spray Pump Discharge ADS Permissive Pressure Switch Replacement"
- Engineering Change Material List for EC 405901
- Work Planning Instructions for EC 405901
- Design Attribute Review for EC 405901, "3-1466-B and D Core Spray Pump Discharge ADS Permissive Pressure Switch Replacement," Revision 000
- 50.59 Review for EC 405901, Revision 000
- M-02, Ex. A Pipe/Tube Fabrication and Installation Checklist for EC 405901, Line PS-3-1466-B
- M-02, Ex. A Pipe/Tube Fabrication and Installation Checklist for EC 405901, Line PS-3-1466-D
- E-05, Ex. A, Instrument Installation Checklist for drawing 12E-3780C
- WO 00654292, "D3 34Y EQ Repl PS 3-1466-B"
- DIS 0287-01, "Automatic Depressurization System CS and LPCI Pumps Discharge Pressure - High (Permissive) Channel Calibration and Channel Functional Test," Revision 19
- Operations Log for the period of 01/12/2017 17:10 through 01/25/2017 05:56
- Drawing: 12E-3780C, Wiring Diagram Instrument Rack 2203-19B Section A, LPCI/Containment Cool. & Core Spray System, Revision U
- Drawing: 12E-3758B, Wiring Diagram Panel 903-33, Part 1, Revision AP
- OPEX Just-In-Time Operating Experience, "Opex Reports for Compression Fittings," Revision 7 January 2010

#### 1R19 Post-Maintenance Testing

- WO 04568974, "3B SBO Starting A/C Lifting Relief and Running Continuously"
- WO 01962339, "D2 QTR COM SBO Diesel Generator Surv Test"
- WO 01962338, "D2 QTR COM SBO Diesel Gen Jacket WTR Coolant Sample"
- WO 01962336, "D2 QTR COM SBO Diesel Generator Engine Crankcase Lub Oil Sam"

- WO 01935486, "D2 2Y PM Perform SBO DG Overspeed Test"
- WO 01962334, "D2 QTR COM SBO Diesel Fuel Oil Day Tank Sample"
- WO 01864098, "TS&R U3 SBP Inverter"
- WO 01832392, "D2 2YR PM SBO DG Mechanical Maintenance Inspection"
- WO 01828953, "TSR 2B SBO Immersion Heater and TB TX-B"
- WO 01640175, "D2 4YR PM 4KV Cub Insp Bus 24 Cub 16; SBO Bus 61 Tie"
- WO 01639635, "U2 SBO D/G KVAR (Local) Meter OOT – Needs Replaced"
- WO 01636375, "4Y PM Insp 4KV BKR UTC 0000997108"
- WO 00509319, "D2 18Y PM Replace Injectors"
- WO 00509315, "D2 18Y PM RPL Head/Liner Gaskets, Heat Seat Rings & CYL Lin"
- WO 00505453, "D2 18Y PM Replace Pumps"
- WO 00505452, "D2 18Y PM Replace Pumps"
- IR 3971160, "2B SBO Immersion Heater Not Turning Off"
- IR 3970981, "U2 SBO Did Not Meet AC on Overspeed Trip Test"
- IR 3970762, "U2 SBO Bad I/O Card"
- IR 3952061, "B" Fieldbus Isolator Not Working for Unit 3 SBO DCS"
- IR 2730141, "3B SBO Starting A/C Lifting Relief and Running Continuously"
- IR 2707271, "3B SBO Starting Air Compressor Degraded"
- IR 2696478, "Capacitor Connection in U3 SBO Inverter at Elevated Temperature"
- IR 2696128, "U2 SBO DG Quarterly Run Temperatures High"
- IR 2696130, "U2 SBO DG Quarterly Run Abnormalities"
- IR 2621522, "DG FASA Noted 18 Year PM Extension Questions"
- IR 2608558, "SPC Created Without PI-AA-125 Required WGE for Risk Impact"
- IR 2532128, "U2 SBO DG Main Air Lvl Leaking By"
- IR 2495381, "Elec Insp Revealed Signs of Overheating on Term Points"
- IR 2495126, "Turbo Charger Impeller Leading Edge Damaged"
- DOP 6620–16, "SBO D/G 2(3) Preparation for Standby Readiness," Revision 16
- DOP 6620–22, "Emergency Shutdown of 2(3) SBO Diesel Generator," Revision 03
- DOS 6620–07, "SBO 2(3) Diesel Generator Surveillance Tests," Revision 44
- DOS 6620–07, "SBO 2(3) Diesel Generator Surveillance Tests," Revision 45
- DOS 6620–08, "SBO 2(3) Diesel Generator Overspeed Trip Test," Revision 02
- Drawing: 262LN007–002, SBO Distribution DC System, Revision 00
- Drawing: 12E-6870AB, Schematic Diagram Generator & Engine A/B, Revision B
- Drawing: 12E-6870AB, Schematic Diagram Governor/Speed Control Station Blackout, Revision B
- Drawing: 12E-6870AB, Schematic Diagram Station Blackout Engine A/B Programmable Logic Controller Output/Bypass Control, Revision C
- WO 01407548, "D2 20Y PM Repl CS Pump Start Time Delay Relay 2–1430–130B–1"
- INPO OPEX JIT-026, "Logic Circuit Testing," Revision 2, November 2008
- WO 04600520–01, "D3 1M TS Unit Diesel Generator Operability"
- WO 01946436–02, "Generate WO to Replace EDG Startup Air Fltr Housing Gasket"
- WO 01946437–02, "Generate WO to Replace EDG Startup Air Fltr Housing Gasket"
- WO 01922230–03, "EWP EM PMT For One Time Replace of EDG Components"
- WO 01922218–04, "One Time Replacement of EDG Component Per FASA 02601715"
- WO 01919465–02, "U3 EDG: 3–6699–105 D/G Air Start Relay Vlv Air Leak"
- WO 01903347–02, "D3 AN PM Change EDG Starting Air Filter Elements 3–4600–D"
- WO 01903348–02, "D3 AN PM Change EDG Starting Air Filter Elements 3–4600–E"
- WO 01903339–02, "D3 AN Com Replace Air Start Regulating Valve on EDG"
- WO 01848395–02, "3–6699–121 D/G Emerg Fuel Oil Shutoff Vlv Leaking"
- WO 01739542–05, "One Time Replacement of 3 EDG Copper Tubing"
- WO 01712093–03, "4Y PM Insp 4kv Bkr UTC 0000874028"
- WO 01712093–04, "4Y PM Insp 4kv Bkr UTC 0000874028"
- WO 01707938–03, "D3 4Y PM Repl D/G Air Start Motor Solenoid"
- WO 01406238–02, "D3 6Y PM Insp MCC 39–2 E1 Bkr D/G Fuel Oil Xfr PP"

- WO 01406238-03, "D3 6Y PM Insp MCC 39-2 E1 Bkr D/G Fuel Oil Xfr PP"
- WO 01351462-89, "Ops M&TE Usage Tracking Work Order"
- WO 01287804-04,, "D3 12Y EQ PM Replace Breaker 3-7839-2A2"
- IR 3979234, "WO 01885755-02 Did Not Complete as Scheduled"
- IR 3979233, "EMD Work Scope Deleted From U3 EDG Work Window"
- IR 3979232, "WO 01287804-01 Did Not Complete as Scheduled"
- IR 3979231, "WO 01287807-01 Not Completed as Scheduled"
- IR 3979230, "EMD Work Not Completed Per Schedule"
- IR 3979052, "U3 EDG C/S Wiring Issues"
- IR 3977536, "U3 EDG Governor C/S Not Functioning"
- IR 3977534, "Fuel Oil Leak on D3 EDG Fuel Prime Pump 1/2" Suction Union"
- DES 6600-08, "Diesel Generator Electrical Maintenance Surveillance Inspection," Revision 35
- DOS 6600-01, "Diesel Generator Surveillance Tests," Revision 134
- DOS 6600-12, "Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Start," Revision 64
- 50.59 Review of DOS 6600-12, "Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart," Revision 64
- WO 04609466-02, "Coolant Leak at Outlet Piping"
- WO 04603537-01, "D2 1M TS Unit Diesel Generator Operability"
- WO 04602419-01, "D2 1M TS Diesel Fuel Oil Day Tank, Sample Fuel Oil"
- WO 04602418-01, "D2 1M TS D/G Main Fuel Tank, Sample Fuel Oil"
- WO 04602417-01, "D2 1M COM Diesel Generator, Sample Crankcase Oil"
- WO 04579983-01, "D2 Qtr TS EDG Fuel Oil Transfer Pump Test"
- WO 01936955-02, "PI&R Oil Leak on EDG Scavenging Oil Pump"
- WO 01922239-03, "One Time Replacement of EDG Component Per FASA 02601715"
- WO 01922236-03, "One Time Replacement of EDG Component Per FASA 02601715"
- WO 01900816-02, "D2 AN Com Replace Air Start Regulating Valve on EDG"
- WO 01817918-09, "D2 2Y PM Standby Diesel Generator Inspection"
- WO 01808454-02, "D2 2Y PM Overhaul Valve"
- WO 01739541-04, "One Time Replacement of EDG Copper Tubing"
- WO 01614801-03, "4YR PM Inspect 4kv Bkr, UTC 0000874024"
- WO 01412036-02, "D2 6Y PM Clean and Inspect Check Valves"
- IR 3983642, "PI 2-6641-18 Reading Off Scale High"
- IR 3983630, "U2 EDG Overload Alarm"
- IR 3983614, "Identification of Lube Oil Flex Hoses Needing Replacement"
- IR 3983446, "U2 Emergency Diesel Failure to Trip"
- IR 3983300, "Coolant Leak at Outlet Piping"
- DOS 0040-02, "Operator Oil Sampling for Offsite Laboratory Analysis," Revision 147
- DOS 6600-01, "Diesel Generator Surveillance Tests," Revision 134
- DOS 6600-12, "Diesel Generator Tests Endurance and Margin/Full Load Rejection/ECCS/Hot Restart," Revision 64
- DOS 6600-14, "Diesel Oil Transfer Pump Operation and Fuel Consumption Test," Revision 22
- WO 04579995-01, "D3 QTR TS HPCI Pump Oper Test and IST Surv"
- WO 01820106-02, "D3 2Y PM Check/Adjust Repack Valve"
- WO 01820100-02, "D3 2Y PM Insp HPCI Oil Filters/Clean Elements"
- WO 01795666-01, "D3 2Y TS HPCI Pump Comprehensive Oper Test and IST Surv"
- WO 01430393-04 and -03, "D3 6Y Maintenance/Repack/Flowsan"
- WO 01423639-03, "D3 6Y PM INSP/OH/REPL Diaphragm Stm Ln Drn Isol Vlv"
- WO 01423635-03, "D3 6Y PM Replace HPCI Steam Line Drain Solenoid Valve"
- WO 01423634-03, "D3 6Y PM Replace HPCI Steam Line Drain Solenoid Valve"
- WO 01295584-03, "D3 6Y PM Replace Solenoid Valve 3-2303-SV8"
- WO 01295490-06, "D3 6Y PM INSP/Maint/Repack/Flowsan Stm Ln Drn Vlv"
- IR 3985063, "Grey Discoloring in U3 HPCI Booster Pump Out Bearing Sample"
- IR 3984974, "Unit 3 HPCI Room Cooler Eddy Current Results"

- IR 3984753, "Pressure Switch Out of Tolerance (Non Tech Spec)"
- IR 3984752, "Pressure Switch Out of Tolerance (Non Tech Spec)"
- IR 3984390, "Unable to Gag 3-2301-74 for CO 138371"
- IR 3983969, "HPCI C/O Issues"
- DMP 0040-07, "Adjust or Add Packing to Single Packing Gland Valves," Revision 09
- DOS 2300-01, "High Pressure Coolant Injection Valve Operability and Timing," Revision 52
- DOS 2300-10, "High Pressure Coolant Injection System IST Comprehensive/Preservice Pump Test," Revision 21
- HLA Briefing Worksheet for DOS 2300-03/10, "HPCI System Operability and IST Testing"
- Testing/Procedure Cover Sheet for DOS 0040-2, "HPCI Oil Samples in Support of WO 1795666-01," Revision 147
- ER-AA-335-017, "VT-3 Visual Examination of Pump and Valve Internals," Revision 8
- NEI 15-03, "Licensee Actions to Address Nonconservative Technical Specifications," Revision 0
- Drawing: M-374, Diagram of High Pressure Coolant Injection Piping, Revision CV
- IR 03988159; "2-2301-3 U2 HPCI Turb Stm Supply MOV Did Not Open"
- WO 04587381; "D2 Qtr HPCI Pump Oper Test and IST Surv"
- WO 04616404; " 2-2301-4, U2 HPCI Suct Isol MOV Did Not Open"
- MA-AA-723-300; "Diagnostic Testing of Motor Operated Valves"; Revision 11
- DOS 2300-01; "High Pressure Coolant Injection Valve Operability and Timing"; Revision 52
- DOS 2300-03; "High Pressure Coolant Injection System Operability and Quarterly IST Verification"; Revision 112

#### 1R22 Surveillance Testing

- WO 01794880, "D2 2YR TS HPCI Pump Comprehensive Oper Test and IST Surv"
- DOS 2300-10, "High Pressure Coolant Injection System IST Comprehensive/Preservice Pump Test," Revision 21
- DOP 2300-01, "High Pressure Coolant Injection (HPCI) System Standby Operation," Revision 56
- EC 376701, "SBGT Reduced Flow with RBV in Operation," Revision 0
- WO 04609516-01, "D2/3 3M TS SBGT 'B' Charcoal Absorber Moisture Removal"
- WO 04592709-01, "D2/3 3M TS SBGT 'A' Charcoal Absorber Moisture Removal"
- WO 04582314-01, "D2/3 QTR TS (IST) SBGT Valve Timing"
- IR 3959258, "Use of Hydrocarbon Compounds and Effect of Standby Gas"
- IR 3959045, "Potential Use of Volatile Organic Carbon-Containing Chemical"
- IR 2731869, "Labeling Issue: SBGT Wrong Power Supply Listed"
- DOP 5750-02, "Reactor Building Ventilation," Revision 45
- DOS 7500-02, "SBGT System Surveillance and IST Testing," Revision 53
- Drawing M-49, Diagram of Standby Gas Treatment, Revision RA

#### 1EP6 Drill Evaluation

- Dresden Station 2017 Pre-Exercise Manual
- Event Notification Worksheets for EN# 54321 and 54322
- Station Priorities Log for the Period of 03/08/2017 08:56 through 03/08/2017 10:15
- OSC Team Briefing – Debriefing Form for Dresden 2017 Pre Ex
- Position Log for TSC Maintenance Manager for the period of 03/08/2017 08:38 through 03/08/2017 11:46
- Nuclear Accident Reporting System (NARS) Utility Messages 1, 2 and 3 for 03/08/2017
- IR 3983452, "DRE-EP-2017-PEX-CR Sim-Failed Objective"
- IR 3983473, "DRE—EM&SC Failed DC"
- IR 3969884, "EP-DEP Failure During 1Q17 Focus Area Drill (FAD)"
- IR 2730981, "EP-3Q16 Focus Area Drill TSC Comments"
- IR 2637665, "EP-Failed PAR DEP in TSC (Drill Confidentiality Lifted)"

- EP-AA-1004, "Radiological Emergency Plan Annex For Dresden Station," Revision 35
- EP-AA-113-F-19, "Dresden Assembly, Accountability and Evacuation Guidelines," Revision D
- EP-MW-114-100, "Midwest Region Off-Site Notifications," Revision 16

#### 2RS5 Radiation Monitoring Instrumentation

- APEX Invivo: Background Check Count Analysis Report, 2/27/2017
- APEX Invivo: Calibration Check Count Using Cs-137/Co-60 Check Source Performed, 2/27/2017
- IR 03964519, "Unable to Perform Preventive Maintenance on All CAM"
- IR 02706277, "Refuel Floor CAM has Power Issues"
- IR 02578068, "Unit 2/3 CAM Digital Display Does Not Match Flow Calibrator"
- IR 02596369, "Canberra Fastscan Whole Body Counter Software Issue"
- IR 02524832, "Canberra Fastscan Whole Body Counting System QC Test Failure"
- IR 03970234, "Control Room Received Half Group II Isolation on DW High Rad Monitor Failure"
- IR 02659209, "Unexpected Alarms, Group-2 Isolation Initiated and Drywell High Rad Monitor"
- IR 02717784, "Portal Monitor Failed Daily Source Checks"
- IR 02657535, "Unit 2/3 Chimney SPING Channel 5-6 Failed to Check Source"
- IR 02654565, "Unit 2/3 Reactor Building SPING Channel 3 Iodine Found out of Tolerance"
- IR 03964519, "Unable to Perform PM on All CAMs"
- IR 02659223, "Unexpected Alarm on Unit 2/3 Turbine Building CAN Trouble"
- IR 02682405, "Turbine Building CAM Trouble"
- CY-AA-130-201, Radiochemistry Quality Control, Revision 4
- CY-AA-130-320, Perkin Elmer (Packard) 2900 TR/3100 TR 4910 TR Liquid Scintillation Counter, Revision 4
- Dresden Counting Room Detector 2997068, Calibration, Post Calibration, LLD Determination, Efficiency Verification Certificate of Calibration, November through December 2016
- RP-AA-700, Controls for Radiation Protection Instrumentation, Revision 4
- RP-AA-700-1002, Determination of Correction Factors for Radiation Protection Neutron Instrumentation, Revision 0
- RP-AA-700-1100, Operation of Eberline RO-2/2A/20 Bicron, RSO-50 E, Revision 1
- RP-AA-700-1204, Operation of Eberline SAC-4 Alpha Counter, Revision 2
- RP-AA-700-1205, Calibration of Eberline SAC-4 Alpha Counter, Revision 2
- RP-AA-700-1240, ARGOS-5 Calibration Data Sheet Monitor No. 1206-083 Data Sheet, 1/21/2016
- RP-AA-700-1240, ARGOS-5 Calibration Data Sheet Monitor No. 1206-084 Data Sheet, 6/11/2015
- RP-AA-700-1240, ARGOS-5 Calibration Data Sheet Monitor No. 1011-285 Data Sheet, 5/21/2015
- RP-AA-700-1235, PM-12 Calibration Data Sheet Monitor No. PM-12-012 at MAF, 10/11/2016
- RP-AA-700-1235, PM-12 Calibration Data Sheet Monitor No. PM-12-0121, 8/5/2016
- RP-AA-700-1239, SAM-12 Calibration Data Sheet Monitor No. 151, 5/2/2016
- RP-AA-700-1210, IPM Calibration Data Sheet Monitor No. 285, 2/18/2016
- Canberra; Calibration of Canberra Fastscan No. 1 Whole Body Counter, 7/29/2015 and 7/22/2016
- Canberra; Calibration of Canberra Accuscan II Whole Body Counter, 7/21/2016
- RP-AA-700-1213, Operation and Calibration of PCM-2 Whole Body Frisking Monitor, Revision 1
- Power Lab Certificate of Calibration 0010993671 Thermo Electron RM-25 No. 1227, 1/19/2017
- Power Lab Certificate of Calibration 0010986132 MGP AMP-100 No. 5014-036, 10/28/2016

#### 4OA1 Performance Indicator Verification

- NEI 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7
- Initiating Event Performance Indicator Data for Dresden Unit 2 and Unit 3 Covering January through December 2016.
- LS–AA–215, “Monthly Data Elements for NRC RETS/ODCM Radiological Effluent Occurrences,” Revision 5
- Open EMS Liquid Permit Post Release Data and Gas Permit Post Release Data, Dose Data Collection Quarterly for 2016
- Performance Indicators Data were reviewed from January through December 2016 for Occurrences Report

#### 4OA2 Identification and Resolution of Problems

- Apparent Cause Investigation(ACE) Report for CR 2633687, “2016 NOS Maintenance Audit”
- ACE Report for CRs 2656804 & 2659008
- ACE Report for CR 3951859, “CCP: Unexpected Alarms on 904-7 and 903-8 Panel”
- Focused Area Self-Assessment for IR 2577809-02
- Check In Self-Assessment: IR 2722365, “Precision Maintenance PIIM Effectiveness”
- Collective Effectiveness Review for CR# 02549529, “Clearance Order Error Identified During Safety Verif”
- WO 04589254, “D2/3 1M AD Insp Non-Conforming Material Hold & Checklist”
- WO 01409099, “IM Refurbish Gemac Power Supply Boards and Return to Stock”
- IR 3977584, “NOS ID: All Materials in Stock Were Not Labeled or Visible”
- IR 3977408, “NOS ID Outdated ISM Standard Referenced by Vendor”
- IR 3976242, “Reactor Engineering Discretionary Crew Clock Reset”
- IR 3974104, “NRC FP Triennial Inspection – Breaker FME Issue”
- IR 3975960, “NRC Request for Information”
- IR 3968482, “MMD Fatigue Assessment for OSHA Recordable Injury”
- IR 3967741, “OPS Crew 4 Discretionary Crew Clock Reset”
- IR 3967642, “OPS Crew 4 Discretionary Crew Clock Reset”
- IR 3964238, “EC 383762 Failed to Update DES 2300–02”
- IR 2715670, “Time Sensitive Action – Local OPS of FWRV in DOA 0600–01”
- IR 2700906, “CBI Missed Opportunity to Identify Vendor Manual Discrepancy”
- IR 2697388, “Level 3 Procedure Usage and Adherence”
- IR 2659008, “Work With Training and TMOD to Develop Leadership Training”
- IR 2633687, “NOS Maintenance Audit”
- IR 2563258, “NOS ID: No Acceptance Criteria for Work Order Step”
- HU–AA–104–101, “Procedure Use and Adherence,” Revision 5
- MA–AA–716–001, “Quality Material/Components Control and Identification/Segregation of Non-Conforming Items,” Revision 8
- MA–AA–716–010, “Maintenance Planning,” Revision 24
- MA–AA–716–011, “Work Execution & Close Out,” Revision 23
- MA–AA–716–026, “Station Housekeeping/Material Condition Program,” Revision 15
- SA–AA–122, “Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Containers/Dewars,” Revision 14

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion

- IR 2721185, “2/3 Reactor Building Interlock Outer Door Deficiencies”
- IR 2686422, “Repair Door Seal 2/3 Reactor Interlock Door”
- IR 2438433, “D–2 Reactor 517’ Truck Interlock Outside Doors Need Repairs”
- ACE[Apparent Cause Investigation Report] of IR 2738559, “Loss of Secondary Containment and Unplanned Entry Into TS 3.6.4.1”
- MRC Package for review of ACE of IR 2738559, “D3R24LL: TS 3.6.4.1 Entry/ENS Notification (RB D/P.-0.25)”

- 50.59 Review of DAP 13–03, “Unit 2 Reactor Building Trackway Interlock Door Access Control,” Revision 25
- 50.59 Review of DAP 13–03, “Unit 2 Reactor Building Trackway Interlock Door Access Control,” Revision 24
- DAN 923–5 C–1, “RX BLDG dP LO for Sensor 2/3–5703–7C,” Revision 17
- DOA 1600–10, “Secondary Containment Verification/Restoration,” Revision 1
- Operator Log for Period of 11/07/2016 20:00 through 11/08/2016 18:04
- Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation),” Revisions 2 and 3
- Charcoal Filter Bank Failure to Meet the Methyl Iodide Penetration Acceptance Criteria”
- Special Plant Condition 2717473-04, “Track Analysis of Failed Charcoal from the Reserve Charcoal Retained Following Replacement.”
- IR 3966478, “SPC Assignment Extension Request Didn’t Receive MRC Approval”
- IR 3973661, “CREVS Charcoal Analysis Results From Nucon”
- IR 2717473, “CREVS Charcoal Test Results Did Not Meet Acceptance Criteria”
- IR 1118497, “CREVS AFU Paint Inspection Results”
- IR 1116978, “Charcoal Tray Order Missing Component”
- IR 0891719, “Cracked/Loose Paint Found in CREVS AFU”
- WO 01773006, “D2/3 24M TS CR Air Filter Unit Perf REQ (Charcoal Leak)”
- CREVS Air Filter Unit Charcoal Test History
- DTS 5750–05, “Control Room Air Filter Unit Performance Requirements (Methyl Iodide Removal and Charcoal Leak Test),” Revision 20
- NUCON International, Inc., Carbon Test Report Dated 26 JAN 2017, Sample Log No. 0117–10
- Letter from W. Gammill, Office of Nuclear Reactor Regulation, NRC to F. Lackie, Nuclear Containment Systems, Inc. Dated September 24, 1981 RE: Guidance on Test Conditions for Activated Charcoal Using Methyl Iodide
- Regulatory Guide 1.52, “Design, Testing, and Maintenance Criteria for Post Accident Engineered—Safety—Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light—Water—Cooled Nuclear Power Plant,” Revision 2 Dated March 1978

#### 40A5 Other Activities

- IR 01509103, “NRC Questioned Calculation Methodology for ISO Condenser”
- IR 01599386, “Increase in Measured Carryover During U2 IC Heat Capacity Test”
- EC 402815, “Evaluation of Isolation Condenser Performance Under Actual Valve 1301-3 Settings”
- Calculation 0101–0072–01, “Dresden Isolation Condenser Heat Transfer Calculation”, Revisions 1 & 2
- FAI/13–0451; “Boil-Up of a Water Pool Due to Boiling Heat Transfer From a Horizontal Heater Bundle”; Revision 0

#### 40A5 Other Activities/NRC Temporary Instruction

- WO 01948797–01, “D2/3 1M PM Dresden Switchyard Equipment Inspection”
- WO 01595893–01, “Install Annunciator Card for 903–8 G–4 Window”
- WO 01541136–12, “RAT TR22/TR86 Loss of Phase Protective Relay Circuit”
- WO 01541135–03, “RAT TR32 Loss of Phase Protective Relay Circuit Installation”
- IR 3967909, “Request DOS 6400–03 for Multiple Revisions”
- IR 3967736, “Procedure Rev DOS 6400–03”
- IR 3953880, “BUS 33-1 Phase A-B and B-C Volts Select Failed”
- IR 1445937, “Loss of Phase Annunciator 903–8 G 4 Window Does Not Work”
- DOS 6400–03, “Dresden Station Switchyards Equipment Inspection,” Revision 15
- Operability Evaluation 12–003; EC 387735 Rev 006
- 50.59 Review No. 2014–0048, for EC 399218/399219, “Unit 2 4kv Bus Transfer Logic Modification for an Open Phase Event Concurrent with a LOCA,” Revision 0



- 50.59 Review for EC 388778 & 388779, "Units 2 & 3 RAT TR32 & TR22 Open Phase Detection Protective Relay Circuit Installation," Revision 002 & 000
- EC 399218, Design Consideration Summary, "Unit 2 4kv Bus Transfer Logic Modification for an Open Phase Event Concurrent with a LOCA," Revision 000
- Work Planning Instructions for EC 399218, Rev. 000
- SARB Challenge Meeting Minutes for AR 3950139, "Open Phase Modifications," Dated 2/7/2017
- Memorandum from Roy K. Mathew to Patrick Hiland, Office of Nuclear Reactor Regulation, Subject: NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System": Summary Report Dated 2/26/2013
- Letter from William M. Dean, NRR to Anthony R. Pietrangelo, Nuclear Energy Institute Dated 11/25/2014.
- NUREG-0800, Standard Review Plan, "Branch Technical Position (BTP) 8-9, Open Phase Conditions in Electric Power System," Revision 0
- Drawing: 12E-2958, Schematic Diagram Reserve Auxiliary Transformer 32 Trip Relays, Revision V
- Drawing: 12E-2339, Schematic Diagram Reserve Auxiliary Transformer 22 Trip Relays, Revision W
- LORT Course N-120PJIT, "Byron Scram and LOOP Review," and Course Attendance Sheet
- LORT Course # LT15-02A, "Unit Shutdown Training Per DGP 02-01 with Equipment Malfunctions," Sept 2015 and Class Roster
- Class Roster for Course N-DRELOC5, 2013 - 2015
- DAN 902(3) E-2, "RES AUX TR 22 Trip, RES AUX TR32 Trip," Revision 10
- DAN 902-8 G-10, "RES AUX TR 22 TR 86 Low Load/Trble," Revision 0
- DAN 902-8 D-11, "RES AUX TR 22/TR 86 Open Phase," Revision 0
- DOA 6500-09, "LOCA Concurrent With a Failure of Degraded Voltage Relay Protection," Revision 12
- DAN 903-8 E-4, "RES AUX TR 32 Open Phase," Revision 01
- DAN 903-8 G-4, "RES AUX TR 32 Low Load/Trouble," Revision 00
- DAN 903-8 C-4, "4 kv Bus 33-1 Voltage Degraded," Revision 15
- DAN 903-8 D-4, "4 kv Bus 34-1 Voltage Degraded," Revision 14
- DOS 6400-03, "Dresden Station Switchyard Equipment Inspection," Revision 15
- Dresden Completed Work Orders 8/2014 Thru 5/2016 (Non-PM) - Transmission and Substation

## LIST OF ACRONYMS USED

|        |   |
|--------|---|
| AC     | Alternating Current                                       |
| ACE    | Apparent Cause Evaluation                                 |
| ADAMS  | Agencywide Document Access Management System              |
| ADS    | Automatic Depressurization System                         |
| ASME   | American Society of Mechanical Engineers                  |
| BOP    | Balance Of Plant  |
| CAP    | Corrective Action Program                                 |
| CFR    | <i>Code of Federal Regulations</i>                        |
| CREV   | Control Room Emergency Ventilation                        |
| CS     | Core Spray  |
| dP     | Differential Pressure                                     |
| EC     | Engineering Change  |
| ECCS   | Emergency Core Cooling System                             |
| EDG    | Emergency Diesel Generator                                |
| HPCI   | High Pressure Coolant Injection                           |
| IC     | Isolation Condenser                                       |
| IMC    | Inspection Manual Chapter                                 |
| in WC  | Inches Water Column                                       |
| IP     | Inspection Procedure                                      |
| IR     | Inspection Report   |
| IR     | Issue Report  |
| KW     | Kilowatts   |
| LCO    | Limiting Condition of Operation                           |
| LER    | Licensee Event Report                                     |
| LLC    | Limited Liability Corporation                             |
| LPCI   | Low Pressure Coolant Injection                            |
| MOV    | Motor Operated Valve                                      |
| NCV    | Non-Cited Violation                                       |
| NEI    | Nuclear Energy Institute                                  |
| NOS    | Nuclear Oversight   |
| NRC    | U.S. Nuclear Regulatory Commission                        |
| OPC    | Open Phase Condition                                      |
| OPDRV  | Operations with the Potential to Drain the Reactor Vessel |
| OPEVAL | Operability Evaluation                                    |
| OOS    | Out-of-service  |
| PI     | Performance Indicator                                     |
| PMT    | Post-Maintenance Testing                                  |
| RB     | Reactor Building  |
| RBCCW  | Reactor Building Closed Cooling Water                     |
| RFL    | Refuel  |
| SBGT   | Standby Gas Treatment                                     |
| SBO    | Station Blackout  |
| SSC    | Structures, Systems, and Components                       |
| TI     | Temporary Instruction                                     |
| TS     | Technical Specification                                   |
| TSSR   | Technical Specification Surveillance Requirement          |
| UFSAR  | Updated Final Safety Analysis Report                      |
| URI    | Unresolved Item   |
| WO     | Work Order  |