



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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May 8, 2019

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Co., 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 05000237/2019001 AND
05000249/2019001

Dear Mr. Hanson:

On March 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Dresden Nuclear Power Station, Units 2 and 3. On April 8, 2019, the NRC inspectors discussed the results of this inspection with Mr. P. Karaba 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. These findings involved violations of NRC requirements. Because the licensee has initiated actions within their corrective action program to address this issue, the violation is being treated as Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report.

If you contest the violations or significance or severity of the violations documented in this inspection report, 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 Dresden.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the 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 Dresden.

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/

Kenneth Riemer, Chief
Branch 1
Division of Reactor Projects

Docket Nos.: 05000237; 05000249

License Nos.: DPR-19; DPR-25

Enclosure:

IR 05000237/2019001; 05000249/2019001

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Letter to Bryan Hanson from Kenneth Riemer dated May 8, 2019

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3—NRC
 INTEGRATED INSPECTION REPORT 05000237/2019001 AND
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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000237 and 05000249

License Numbers: DPR-19 and DPR-25

Report Numbers: 05000237/2019001 and 05000249/2019001

Enterprise Identifier: I-2019-001-0053

Licensee: Exelon Generation Company, LLC

Facility: Dresden Nuclear Power Station, Units 2 and 3

Location: Morris, IL

Inspection Dates: January 01, 2019 to March 31, 2019

Inspectors: R. Elliott, Resident Inspector
A. Nguyen, Senior Resident Inspector
C. Phillips, Project Engineer
M. Porfirio, Illinois Emergency Management Agency

Approved By: Kenneth Riemer, Chief
Branch 1
Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting a quarterly inspection at Dresden Nuclear Power Station, Units 2 and 3 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. Findings and violations being considered in the NRC’s assessment are summarized in the table below.

List of Findings and Violations

Failure of Safety-Related 4 kV Bus Degraded Voltage Relay			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000249,05000237/2019001-01 Open/Closed	None (NPP)	71152
A self-revealed Green finding and associated non-cited violation (NCV) of Technical Specification 5.4.1(a) was identified for the licensee’s failure to develop a procedure for preventive maintenance schedules for the inspection or replacement of parts that have a specific lifetime. Specifically, the licensee did not develop procedures covering a preventive maintenance schedule for the safety-related 4 kV bus degraded voltage relays, which had a specific lifetime.			

Loss of Unit 2 Reserve Auxillary Transformer TR22			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000237/2019001-02 Open/Closed	[H.5] - Work Management	71153
The inspectors identified a Green finding and associated NCV of 10 CFR 50.65 a.4 for the failure to adequately assess and manage the increase in risk that resulted from the maintenance activities performed on the Unit 2 Reserve Auxiliary Transformer (RAT) TR 22 on January 15, 2019. Specifically, the licensee failed to identify that a relay, with the ability to trip TR 22, was in the path of planned work prior to the performance of the work.			

Additional Tracking Items

None.

PLANT STATUS

Unit 2 began the inspection period at full power. On January 15, 2019, the Reserve Auxiliary Transformer for Unit 2 tripped, which led to a unit down power to 50 percent to restore the transformer and normal electrical lineup. The unit was returned to full power on January 16, 2019. On March 9, 2019, Unit 2 was down powered to 65 percent for control rod exercising and turbine valve testing. The unit was returned to full power on March 10, 2019, and remained there for the rest of the inspection period.

Unit 3 began the inspection period at full power. On January 10, 2019, the unit commenced an emergent down power to 20 percent to conduct repairs on the 3B feedwater regulating valve. The unit returned to full power on January 11, 2019. On March 2, 2019, Unit 3 was down powered to 75 percent for control rod testing, sequence exchange, and turbine testing. The unit returned to full power on March 3, 2019, and remained there for the rest of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.03) (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for extreme cold temperatures on January 24, January 25, and January 28, 2019.

71111.04 - Equipment Alignment

Partial Walkdown (IP Section 02.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 3 reactor building closed cooling water on February 4, 2019
- (2) Unit 2/3 emergency diesel generator on February 11, 2019
- (3) Unit 3 isolation condenser on February 27, 2019
- (4) Unit 2/3 'A' standby gas treatment system on March 25, 2019

71111.04S - Equipment Alignment

Complete Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the 2/3 emergency diesel generators the weeks of March 11 and March 25, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) FZ 14.2B/8.2.8D, Unit 2 Off-Gas Recombiner, Elevation 571' and FZ 14.2C, Unit 2 Off-Gas Condenser/Hydrogen Analyzer, Elevation 590' on February 4, 2019
- (2) FZ 14.3B/8.2.8D, Unit 3 Off-Gas Recombiner, Elevation 571' and FZ 14.3C/8.2.8D, Unit 3 Off-Gas Condenser/Hydrogen Analyzer, Elevation 590' on February 4, 2019
- (3) FZ 1.1.1.3, Unit 3 Reactor Building General Area, Elevation 545' on February 26, 2019
- (4) FZ 2.0, Main Control Room, Elevation 534' on February 26, 2019

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

The inspectors observed and evaluated the licensed operator out of the box evaluation on February 11, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Unit 2 and Unit 3 high pressure coolant injection system room coolers and fans
- (2) Unit 2 and Unit 3 intermediate range monitoring system

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Unit 2 high pressure coolant injection room cooler emergent work on February 21 and 22, 2019
- (2) Unit 2 reserve auxiliary transformer 22 trip and emergent repairs on January 15, 2019
- (3) Elevated risk due to the 345 kV breaker 8-15 trips on January 30 and 31, 2019

- (4) Elevated risk and emergent work for Unit 3 'B' feedwater regulating valve issues on January 10, 2019
- (5) Elevated risk for scheduled maintenance windows on the Unit 2 emergency diesel generator (EDG) the week of March 11-15, 2019 and the Unit 2/3 EDG the week of March 25-29, 2019

71111.15 - Operability Determinations and Functionality Assessments

Sample Selection (IP Section 02.01) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Unit 3 standby liquid control system leak determination
- (2) Unit 2 and Unit 3 4kV bus degraded voltage relays after failure of 459X1-23-1 due to aging
- (3) Past operability of the Unit 2 emergency diesel generator after a bird was discovered in the exhaust piping during a surveillance
- (4) High leakage on the Unit 2 containment cooling service water vault penetrations

71111.19 - Post Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) DOS 6600-01, Unit 2 Diesel Generator Surveillance Test, after it tripped during the scheduled surveillance on February 11, 2019
- (2) DOS 2300-10, Unit 3 High Pressure Coolant Injection System IST Comprehensive Pump Test, after a system maintenance window on February 28, 2019
- (3) DOS 6600-01, Unit 2 Diesel Generator Surveillance Test, following engine overhaul on March 14, 2019
- (4) DOS 6600-01, Unit 2/3 Diesel Generator Fast Start Surveillance Test, following engine overhaul on March 28, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

In Service Testing (IST) (IP Section 03.01) (1 Sample)

DOS 1400-05, Unit 3 Core Spray System Pump Operability and Quarterly IST Test with Torus Available, on February 6, 2019.

Surveillance Testing (IP Section 03.01) (2 Samples)

- (1) DOS 0500-01 and DOS 0500-25, Unit 2 and Unit 3 Reactor Protection System Manual Pushbutton and SCRAM Contactor Testing, on March 19 and 21, 2019
- (2) DOS 7500-02, Unit 2/3 'B' Train Standby Gas Treatment System Surveillance and IST Test, on March 19, 2019

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 2 1st through 4th quarter 2018
- (2) Unit 3 1st through 4th quarter 2018

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

- (1) Unit 2 1st through 4th quarter 2018
- (2) Unit 3 1st through 4th quarter 2018

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

- (1) Unit 2 1st through 4th quarter 2018
- (2) Unit 3 1st through 4th quarter 2018

71152 - Problem Identification and Resolution

Annual Follow-Up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) Unit 3 Electrohydraulic Control (EHC) System Leak caused by Improper Maintenance
- (2) Failure of the Safety-related 4kV Bus 23-1 Degraded Voltage Relay

71153 – Follow-Up of Events and Notices of Enforcement Discretion

Event Follow-Up (IP Section 03.01) (1 Sample)

The inspectors evaluated the trip of the Unit 2 reserve auxiliary transformer, TR-22, and licensee's response on January 15, 2019.

INSPECTION RESULTS

Observation	71152
On December 20, 2018, a leak on the Unit 3 electrohydraulic control (EHC) system had degraded into a steady stream of approximately 10 gallons per day. This required the licensee to make an emergent down power to 22 percent and effect repairs to the leak. This leak was previously identified coming out of the Unit 3 refueling outage (D3R25) in November 2018. The inspectors observed the plant down power and repair activities. The licensee completed a causal evaluation for the leak which identified work control and oversight of supplemental employee components as causes for this issue. The inspectors reviewed the causal evaluation and interviewed plant personnel to ensure the licensee thoroughly evaluated and corrected the	

causes of the issue.

The inspectors determined that the licensee identified appropriate causal factors and implemented timely corrective actions to address the causal factors identified. The primary cause was that the work package was not detailed enough to prescribe the proper materials and tightening methods needed for the seal insert that was replaced during the refueling outage. This work package was created by supplemental employee planners, and as a contributing factor, was not thoroughly reviewed by supervision prior to implementation in the field to ensure it met the correct standards. As another contributing factor, the work did not screen as operationally critical component work (OPCC). The procedure for conducting that screening, MA-AA-716-010-1015, was recently revised after the outage was completed, that would have screened work on the EHC system as OPCC. This would have required a higher level of plant supervision review and involvement in the field. Because the work was on the EHC system, a non-safety related, non-quality system, and the procedure revision that was in place when the work was being conducted did not have it screen as risk-significant, the inspectors determined that a performance deficiency did not exist.

During the causal evaluation, it was determined that the licensee missed an opportunity to incorporate BWROG guidance for the appropriate seal material used in this application. Previously, nickel seal inserts were used in the EHC system fittings. However, in May 2012, information was provided that determined stainless steel inserts were more appropriate for the application. Also, with the different type of material, different tightening and fit-up instructions are provided to ensure leak tightness. A programmatic issue was identified as a weakness in the licensee's incorporation of BWROG information.

Corrective actions have been implemented to ensure the proper materials and tightening methods are used in the EHC system going forward, the work packages are appropriately categorized as OPCC, and that the proper level of plant supervision is involved in OPCC work going forward, regardless of if the work is being conducted by supplemental or in-house employees. The inspectors determined these actions were comprehensive and will be instituted in a timely manner to ensure similar events do not occur. The inspectors also determined the licensee took appropriate actions to make their operating experience program more robust to ensure information is not missed from the BWROG.

The licensee also generated corrective actions to ensure that the proper level of oversight is provided for all risk-significant work activities, especially those conducted by supplemental employees. The OPCC procedure revision information and training has been presented to all supervisors, and work package reviews will be conducted for outage work packages. The inspectors determined that the licensee's extent of condition review for the oversight piece was sufficient.

Failure of Safety-Related 4 kV Bus Degraded Voltage Relay			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000249,05000237/2019001-01 Open/Closed	None (NPP)	71152
A self-revealed Green finding and associated non-cited violation (NCV) of Technical Specification 5.4.1(a) was identified for the licensee's failure to develop a procedure for			

preventive maintenance schedules for the inspection or replacement of parts that have a specific lifetime. Specifically, the licensee did not develop procedures covering a preventive maintenance schedule for the safety-related 4 kV bus degraded voltage relays, which had a specific lifetime.

Description:

On November 29, 2018, while performing a technical specification (TS) surveillance procedure to check the degraded voltage relay calibrations for the Unit 2 safety-related 4kV bus 23-1, Relay 459X1-23-1 failed to drop out as expected after successfully cycling more than once. The 2/3 emergency diesel generator (EDG) was declared inoperable when the surveillance testing began and was declared operable following replacement of this relay (within the allowed outage time of the LCO). Relay 459X1-23-1 performed two functions: 1) a TS function to allow the under voltage (UV) condition to reset when Bus 23-1 is energized, and 2) a non-TS function for a degraded voltage alarm for Bus 23-1. If the reset function of the UV logic did not work and the bus experienced an under voltage condition, the associated emergency diesel generator (in this case, the 2/3 EDG) would start and load onto the bus but the under voltage condition would not reset which would prevent loads from potentially being started (i.e. ECCS pumps). Also, if the reset function of the UV logic was locked in and the bus experienced an under voltage condition, the load shed logic could be bypassed, preventing load shedding and auto start of the EDG.

A failure analysis of the relay was completed and determined that the relay failed to drop out because of a severely degraded relay armature bore, which caused the movable armature to stick and bind. Multiple cracks and fractures were found in the bore and a failed piece of the bore interfered with the full travel of the armature, preventing the normally open contact from closing properly. The relay degradation was attributed to severe aging and heat degradation. This relay was manufactured in 1983 and was believed to be in service for greater than 30 years. Zinc corrosion crystals were also observed on the outer diameter of the armature (which is Zinc plated). This condition is a known occurrence for older model Agastat relays and can lead to high friction forces that bind the relays plungers and prevent normal operation. When tested at the lab, most of the contacts on the relay repeatedly failed to fully close or open.

From the Tyco Electronics manual for Agastat EGP/EML/ETR Series, Nuclear Qualified Control Relays, revised March 2013, the recommended replacement schedule and qualified life of these relays is 25,000 electrical operations or 10 years from the date of manufacture, whichever occurs first. This information was available to the licensee but was not incorporated into a maintenance activity for the relays. Also, a similar event occurred at Dresden in 2007 when acceptance criteria were not met while performing a low pressure coolant injection (LPCI) swing bus functional test. The cause of the test failure was due to age-related degradation of Agastat EGPD003 style relays. These relays failed because they did not have schedules for replacement and were in service for greater than their expected life times. The licensee performed an extent of cause review for those specific type of relays (Agastat EGPD003) to ensure others had replacement activities but did not look at other similar types of relays that could have been installed in the plant and did not have the appropriate replacement schedules. This event and analysis was documented in IR 688074, "Problems Identified during DOS 6600-07," dated October 22, 2007.

The licensee reviewed the maintenance history for these types of relays and the panels in which they are located and determined that the panels, and the relays contained within, were incorrectly classified as "run-to-maintenance" components. The only preventive maintenance (PM) activities completed on these types of relays were 18 month functional checks, with

replacement if failing to pass the check. These PMs were not designed to detect potential aging or degradation issues with the relays. Procedure, ER-AA-200-1001, Equipment Classification, defined a "critical" component as one whose failure could result in the loss of a critical safety function, could adversely impact reactor safety, or is necessary for power production.

Components that are considered "critical" are required by ER-AA-200-1001 to have robust PM strategies that are designed to detect potential aging or degradation issues, and to replace those components on an appropriate schedule prior to their failure.

Corrective Actions: Corrective actions included re-classifying the relays and panels as critical components and work requests were generated for one-time replacements of all of these type of Agastat EGP002 relays with newer style relays (16 total that are on the four safety-related 4kV busses).

Corrective Action Reference: The relay failure was documented in IR 4198610, "Relay Did Not Respond as Expected," dated November 29, 2018.

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to develop a procedure for preventive maintenance schedules for the inspection or replacement of the safety-related 4 kV bus degraded voltage relays, parts that have a specific lifetime, was contrary to Technical Specification 5.4.1 requirements and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone. The performance deficiency was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to develop the schedule for inspection or replacement of the safety-related 4 kV Bus 23-1 459X1-23-1 relay, led to its failure from age-related degradation during surveillance testing. The failure of this relay could have affected safety-related functions of the Unit 2/3 DG from being accomplished in an under voltage condition.

Significance: The inspectors assessed the significance of the finding using Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations". The inspectors answered "no" to all the questions in Exhibit 2 and the finding screened as Green. This determination is based on the operators' ability to manually shed loads and start the DG as needed if the automatic functions would not work as a result of this relay failure.

Cross-Cutting Aspect: Not Present Performance. No cross cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Technical Specification 5.4.1, "Procedures," states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, Section 9, "Procedures for Performing Maintenance," requires, in part, that preventive maintenance schedules shall be developed for the inspection or replacement of parts that have a specific lifetime.

Contrary to the above, as of November 29, 2018, the licensee failed to develop a procedure for preventive maintenance schedules for the inspection or replacement of parts that have a specific lifetime. Specifically, the licensee did not develop procedures covering a preventive maintenance schedule for the safety-related 4 kV bus degraded voltage relays, which had a specific lifetime.

Enforcement Action: This violation is being treated as an Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

Loss of Unit 2 Reserve Auxillary Transformer TR22			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000237/2019001-02 Open/Closed	[H.5] - Work Management	71153
<p>The inspectors identified a Green finding and associated NCV of 10 CFR 50.65 a.4 for the failure to adequately assess and manage the increase in risk that resulted from the maintenance activities performed on the Unit 2 Reserve Auxiliary Transformer (RAT) TR 22 on January 15, 2019. Specifically, the licensee failed to identify that a relay, with the ability to trip TR 22, was in the path of planned work prior to the performance of the work.</p>			
<p><u>Description:</u></p> <p>On January 15, 2019, the licensee performed work on the RAT TR 22 in accordance with work order (WO) 01838949-01. This WO installed a modification to TR 22 to include a new Severon TM8 gas monitor in accordance with Engineering Change (EC) 402310, "Install Severon TM8 on RAT 22." During the modification installation a worker came into contact with relay 63x mounted on the inside of a cabinet door inside of TR 22. This contact with the relay resulted in the trip and deluge of TR 22. An automatic bus transfer occurred and the loads on Buses 22 and 24 were transferred to the Unit 2 Auxiliary Unit Transformer (UAT) TR 21. No loads were lost, the deluge caused no specific damage, and Unit 2 continued to operate without offsite power.</p> <p>The inspectors reviewed the WO instructions with the associated risk assessment and the licensee's modification package. Neither identified the location of relay x63 as a potential configuration control hazard. The inspectors reviewed the licensee's corrective action performance evaluation (CAPE) and had no additional issues.</p> <p>The inspectors responded to the control room and observed the control room operators address the situation and verified that DOA 6100-03, "Aux Power Transformer Trouble," was entered. No load reductions on the UAT were required.</p> <p>Corrective Actions: The licensee tested TR 22 to verify no damage was done to the transformer and then restored the normal electrical lineup on January 16, 2019. The licensee conducted a stand down with all workers and first line supervisors on January 15 and 16, 2019, to discuss the potential outcome of performing work without being aware of the surrounding hazards. A label was installed on the inner door of TR 22 Local Control Cabinet to improve awareness for individuals performing work/walkdowns in the future of the relay mounted on the backside of the inner door. The licensee planned to move the relay to another location in the transformer in D2R26.</p>			

Corrective Action Reference: Action Request 04211037, "TR-22 Trip On Sudden Pressure" dated January 15, 2019.

Performance Assessment:

Performance Deficiency: Title 10 of the Code of Federal Regulations (CFR) 50.65 a (4) required, before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. The scope of the assessment may be limited to structures, systems, and components that a risk-informed evaluation process has shown to be significant to public health and safety. The inspectors determined that the failure to identify that relay x63 was in the work path and could potentially result in a plant transient prior to the start of work was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Initiating Events cornerstone. Specifically, the failure to perform an adequate risk review prior to the commencement of work on the RAT resulted in an unexpected plant transient that had the potential to upset plant stability.

Significance: The inspectors assessed the significance of the finding using Appendix K, "Maintenance Risk Assessment and Risk Management SDP". The finding screened as having very low safety significance (Green) because the incremental core damage probability increase due to performing this maintenance was less than 1E-6.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the risk assessment of the work to be performed failed to identify that relay x63 was in the direct work path to be performed and the relay x63 had the potential to trip and deluge the RAT.

Enforcement:

Violation: Title 10 CFR 50.65 a (4) required, before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. The scope of the assessment may be limited to structures, systems, and components that a risk-informed evaluation process has shown to be significant to public health and safety.

Contrary to the above, on January 15, 2019, the licensee performed work on the RAT TR 22 in accordance with WO 01838949-01 without assessing and managing the increase in risk that resulted from the maintenance performed. This WO installed a modification to TR 22 to include a new Serveron TM8 gas monitor in accordance with EC 402310. The licensee failed to identify that relay x63 was in the direct path of work to be performed and could result in the trip and deluge of TR 22. Relay x63 was bumped by a worker during the performance of the maintenance which resulted in the trip and deluge of TR 22.

Enforcement Action: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 8, 2019, the inspector presented the quarterly inspection results to Mr. P. Karaba and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01—Adverse Weather Protection

- DOA 57–01, Loss of Heating Boilers, Revision 24
- DOP 4450–09, Dresden Cooling Lake Operation with Lake Siphon Line in Use, Revision 05
- DOS 0010–19, Preparation for Cold Weather Operations for Unit 1 & Out Buildings, Revision 44
- DOS 0010–22, Preparation for Cold Weather Operations for Unit 2, Revision 26
- DOS 0010–25, Preparation for Cold Weather Operations for Unit 3, Revision 23
- OP–AA–102–102, General Area Checks and Operator Field Rounds, Revision 15
- OP–AA—107–1001, Station Response to Grid Capacity Conditions, Revision 7
- OP–AA–108–107–1001, Station Response to Grid Capacity Conditions, Revision 7
- OP–AA–108–111–1001, Severe Weather and Natural Disaster Guidelines, Revision 17
- IR 4213356, 2–5790–6056 West U2 Alt Battery Room A/C, Heater Not Working
- IR 4213718, Erratic Indication on TIC 3-5707-5B and in MCR
- IR 4213807, Cold Weather Causing Compounds Issues in Radwaste
- IR 4214017, HVO Round Not Complete Due to Icy Conditions
- IR 4214221, 50,000 Gallon Surge Tank Frozen
- IR 4214336, U2 Screen Wash Control Panel Trouble
- IR 4214344, U3 Screen Wash Control Panel Trouble
- IR 4214632, ETB Exit Door to 534' TB is Broken and May Impact Batt Rooms
- IR 4215131, Low Temp in TR 86 Bldg
- IR 4215744, U2/U3 TB 571' and 590' Fire Piping Freeze Hazard
- IR 4216458, Snow Blockage of SFSC Vents/DOA 0800–01 Entry
- IR 4216531, Cold Weather Lessons Learned
- IR 4217169, Work Impacted by Cold Weather Alert During WW 1-28-19
- IR 4218665, U1 Heating Steam Pipe Burst

71111.04—Equipment Alignment

- IR 3958433, 3A RBCCW PP Discharge Pressure Indicating Gauge Not Accurate
- IR 4217548, LIT Annunciator 903-4 Due to Current RBCCW Plant Line Up
- DOA 3700–01, Loss of Cooling By Reactor Building Closed Cooling Water (RBCCW) System, Revision 20
- DOP 3700–M2/E2, Unit 3 RBCCW System Checklist, Revision 20
- IR 2394583, Can't Perform DSSP Due to FI Not Operating
- IR 3947301, PI 2/3-5241-2 Needs Replacement
- IR 4036662, PMC-Very Small Leak Identified on 2/3 DG Crankcase PS
- IR 4095095, 2/3A Starting Air Compressor Has a Small Air Leak
- DOP 6600–M2, Unit 2/3 Emergency Diesel Generator Checklist, Revision 29
- DOP 6600–E2, Unit 2/3 Standby Diesel Generator, Revision 06
- DOP 1300–M1/E1, Unit 3 Isolation Condenser System Checklist, Revision 26

- Drawing: M-28, Diagram of Isolation Condenser Piping, Revision LR
- DOP 7500-M1/E1, Unit 2/3 Standby Gas Treatment, Revision 06
- DTS 7500-13, SBGT System Visual Inspection, Revision 04
- Drawing: 12E-2400C, Schematic Diagram Standby Gas Treatment System, Revision AO
- Drawing: 26100-001, Standby Gas Treatment, Revision 04

71111.04S—Equipment Alignment

- IR 4229026, Missing Screw in 2RB-341 Junction Box
- DOP 6600-M2, Unit 2/3 Emergency Diesel Generator Checklist, Revision 29
- DOP 6600-E2, Unit 2/3 Standby Diesel Generator, Revision 06
- DOP 6600-04, Diesel Generator 2/3 Preparation for Standby Operation, Revision 32

71111.05AQ—Fire Protection Annual/Quarterly

- Dresden Generating Station Pre-Fire Plan for each fire zone
- EC 400544, Install Temporary Heaters in the Unit 2/3 A/B Offgas Hydrogen Analyzers and Panel 2202(3)-27 Areas
- EC 0400552, Evaluation for Installation of Temporary Heat to Prevent Freezing of Off Gas Level Transmitter Sensing Line
- IR 4215744, U2/U3 TB 571' and 590' Fire Piping Freeze Hazard
- OP-AA-201-004, Fire Prevention for Hot Work, Revision 15
- RMA Checklist #23 U3 Reactor Bldg. General Area EL 545', R.06
- RMA Checklist #27 U3 Reactor Bldg. TIP Drive Room EL 517', R.06
- IR 4224344, Procedure OP-DR-201-012-1001 Enhancement Identified
- OP-AA-201-012-1001, operations On-Line Fire Risk Management, Revision 2
- ER-DR-600-1069, Dresden Units 2 & 3, Site List of High Risk Fire Areas, Revision 0
- OP-DR-201-012-1001, Dresden On-Line Fire Risk Management, Revision 06
- RMA Checklist #14 Main Control Room EL 534', R.06

71111.12—Maintenance Effectiveness

- Maintenance Rule System Basis Document for Units 2 and 3 Intermediate Range Monitoring (IRM)
- MR Function Evaluation for Units 2 and 3 IRM, December 2018
- MRule Expert Panel Meeting Minutes for 10/11/2018
- Maintenance Rule Periodic Assessment #12 for Assessment Period 10/1/2016 -009/30/2018
- IR 4093842, Small U3 HPCI Room Cooler Leak Identified by NLO on Rounds
- IR 4108598, Indications from Eddy Current Testing of U3 HPCI Room Cooler
- IR 4109028, HPCI Room Cooler Tube Plugging
- IR 4112847, 2018 DBAI – HPCI System SR Elec Equipment Not in EQ Program
- IR 4148346, U3 HPCI Room Cooler Degrading
- IR 4162726, High Vibes on U3 HPCI Room Coolers
- IR 4173707, U2 HPCI Room Cooler Abnormal Noise
- IR 4206210, U2 HPCI Room Cooler Leak Identified
- IR 4209073, Mrule Function U2 23-3 Needs (A)(1) Determination
- IR 4213082, U32 HPCI Room Cooler Noise Change
- IR 4217364, Missed MRFF on Function Z23-3 (U3)
- IR 4221994, Step Increase in Vibration Levels on U2 HPCI Room Cooler
- IR 4233992, NRC Questions Regarding MRULE Function U3 23-3 (a)(1) status
- ER-AA-310, Implementation of the Maintenance Rule, Revision 12

- ER-AA-310-1001, Maintenance Rule – Scoping, Revision 4
- ER-AA-310-1002, Maintenance Rule Functions – Safety Significance Classification, Revision 3
- ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 14
- ER-AA-310-1005, Maintenance Rule – Dispositioning Between (a)(1) and (a)(2), Revision 7

71111.13—Maintenance Risk Assessments and Emergent Work Control

- OP-AA-108-117, Protected Equipment Program, Revision 5
- Protected Equipment Lists for Unit 2 and Unit 3 Risk Significant Systems
- WO 04874107, Rebuild 3B FRV Actuator
- IR 4208874, 3B FWRV Issues
- IR 4209532, U3 Bailey FWLC System Trouble: Slave Fail
- IR 4209969, DGA-07 and DOA 0600-01 Entry: Minor Level Transient
- IR 4210399, 4.0 Critique of the Response to the 3B FWRV Failure
- IR 4211436, U3 FWLC Transient
- IR 4211451, 3B FWRV LVDT Rod Appears to be Loose
- IR 4211170, SPC 4185966-03, Degraded O-ring
- IR 4212801, 4.0 Critique – 3B FWRV
- IR 4220046, SPC 4171144-04 – 3B FWRV Degraded O-ring
- DOA 0600-01, Transient Level Control, Revision 63
- DAN 902(3)-5 H-7, Setpoint for RFP Suction Press Lo, Revision 09
- DAN 902(3)-4 F-16, Setpoint for Core Thermal PWR Hi, Revision 12
- DAN 903-6 H-3, Setpoint for FW Control System Panel Trouble, Revision 09
- MRC Meeting Minutes for IR 4208874, dated 3/14/2019
- Drawing: 12E-3419, External Wiring Diagram Feedwater Control System 640-5A Control I/O Module, Revision AU
- Drawing: 12E-3418, Schematic Diagram Feedwater Control System Valve Control, Revision AR
- Drawing: 12E-3750B, Wiring Diagram Feedwater & Recirculation Panel 903-18, Part 3, Revision AM
- Drawing: 12E-3419, Logic Diagram Feedwater Control System Analog Exception Reports, Revision C
- IR 4211037, TR-22 Trip on Sudden Pressure
- IR 4212805, 4.0 Critique – TR22 Trip
- DOA 6100-03, Aux Power Transformer Trouble, Revision 21
- ER-AA-3004, Transformer Post Trip Standardized Test, Revision 0
- Human Performance Issue Verbal Report for IR 4211037
- Drawing: 12E-2377B, Schematic Diagram Reserve Auxiliary Transformer 22 Protection Relaying, Rev. A
- Drawing: Schematic Diagram Reserve Auxiliary Transformer 22 Tripping Relays, Revision Y
- Drawing: 12E-2377B, Schematic Diagram Reserve Auxiliary Transformer 22 Protection Relaying, Revision A
- Drawing: 12E-2609, Wiring Diagram Reserve Auxiliary Transformer 22, Part 2, Revision U
- IR 4215773, Relocate Temperature Compensating Element for SF-6 Breakers
- IR 4215944, Switchyard SF6 Breakers Tripping at Low Temps – Fleet Issue
- IR 4216159, 345 kv CB 8-15 Trip
- IR 4216502, 345 kv CB 8-15 trip
- IR 4216511, Evaluate Decision to Disable TR 32 UV Trip Function
- IR 4217721, 4.0 Critique/Crew 6 Clock Discretionary Clock Reset
- DAN 923-2 E-2, Setpoint: CB 8-15 Trip, Revision 09

- DAN 923-2 E-2, Setpoint: Red Bus 345kv CB Minor Alarm, Revision 09
- DAN 923-2 C-2, Setpoint: TR81 TR83 TR86 Major, Revision 21
- DAN 923-2 E-1, Setpoint: Red Bus 345kv CB Major Alarm, Revision 10
- WR-DR-104-1001, Dresden 345kv Switchyard Configuration Risk Assessment, Revision 08
- IR 4221994, Step Increase in vibration Levels on U2 HPCI Room Cooler
- IR 4222804, U2 HPCI Room Cooler Vibration Isolators Replacement
- IR 4222808, Missing Washer on the Unit 2 HPCI Room Cooler
- IR 4222811, Missing Anchor Bolt on Unit 2 HPCI Room Cooler
- IR 4223134, U2 HPCI Room Cooler Belt Guard Mounting Bolt Not Installed
- IR 4235847, 2/3-6641-181Y1 Relay Failed
- WO 04629553, D2/3 2Y PM D/G Engine Temp Instr Cal
- WO 04629659, D2/3 2Y PM D/G Insp/Clean HT Exchanger
- WO 04629660, D2/3 2Y PM D/G Insp/Clean HT Exchanger
- WO 04640518, D2/3 2Y PM Duplex Fuel Fltr Swap to Alt Replace Existing
- WO 04629548, D2/3 2Y PM Overhaul Valve
- WO 04664268, 2Y PM Standby Diesel Generator Inspection
- WO 4665278, D2/3 10Y EDG Time Delay Relay (TDR3) Replacement
- WO 04829156, Proactive replacement of U2/3 EDG Potential Transformer
- WO 04884419, D2/3 San TS Diesel Generator Fast Start Operability Surveillance
- WO 04891964, D2/3 1M TS Main DG, Sample Fuel Oil, Main Storage Tank
- WO 04891965, D2/3 1 M COM Diesel Generator Sample Crankcase Oil
- WO 04891966, D2/3 1M TS Diesel Generator Fuel Oil Day Tank Sample
- WO 04892852, D2/3 1M TS (IST) Unit Diesel Generator Operability
- DOP 6600-M1, Unit 2 Standby Diesel Generator, Revision 30
- DOP 6600-M1, Unit 3 Standby Diesel Generator, Revision 29
- DOP 6600-E1, Unit 2 Standby Diesel Generator, Revision 04
- DOP 6600-E1, Unit 3 Standby Diesel Generator, Revision 06
- DOP 6600-01, Diesel Generator 2(3) Preparation for Standby Operation, Revision 34

71111.15—Operability Determinations and Functionality Assessments

- IR 4050497, Crystallized Boron Found on U3 SBLC Discharge Piping
- IR 4051222, Unit 3 Standby Liquid Control System Leak
- IR 4208834, Crystallized Boron Found on U3 A SBLC Discharge Piping
- OP-AA-108-115, Operability Determination (CM-1), Revision 21
- LER 249/2017-001-00, U3 Standby Liquid Control System Inoperable Due to a Manufacturing Defect Causing a Piping Leak
- IR 4218878, High Leakage on CCSW Vault Penetrations MK 34 and MK 35
- WO 04638457, 18M TSTR CCSW Pump Vault Penetration Seal Testing
- WO 01875459, 18M TSTR CCSW Pump Vault Penetration Seal Testing

71111.19—Post Maintenance Testing

- IR 4218877, U2 EDG Tripped on High Crankcase Pressure
- IR 4219185, U2 EDG Cylinder #2 EGT Reading Low
- IR 4219203, U2 Diesel Fuel Oil Pump Discharge Pressure High
- IR 4219640, Install Mesh Screen for U2 EDG Exhaust
- IR 4219642, Install Mesh Screen for 2/3 EDG Exhaust
- IR 4219644, Install Mesh Screen for U3 EDG Exhaust
- IR 4222049, 4.0 Critique: U2 EDG Trip
- WO 04876775, D2 1M TS (IST) Unit Diesel Generator Operability

- DOS 6600–01, Diesel Generator Surveillance Tests, Revision 142
- IR 4110057, Unit 3 HPCI Turbine-CV Rack Steam Leak at Flange Mating Surf
- IR 4209267, 2-2301-31 Valve Timed Slow
- IR 4213581, FS 3-2354 High Switch Found OOT
- IR 4223962, Acceptance Criteria for AOV 3-2301-64 As Found Valves OOT
- IR 4224962, U3 HPCI Oil Tank Heater Breaker Tripped
- WO 01430387, PMT to Check for Leaks HPCI Lub Oil CLR at Press
- WO 01820110, PMT Inspect D3 HPCI Wtr Pmp Suction Strner for Leaks
- WO 04615842, HPCI Pump Comprehensive Oper Test and IST Surv
- WO 04620523, PMT Insp HPCI Oil Filters for Leaks
- WO 04854352, HPCI Motor Operated Valve (MOV) Operability
- DOS 2300–01, High Pressure Coolant Injection Valve Operability and Timing, Revision 54
- DOS 2300–10, HPCI System IST Comprehensive Pump Test, Revision 23
- IR 4228538, Rotor Winding Resistance Measurements for EDG
- IR 4228544, Difficulty Encountered during Replacement of 2-3903- DGWCPM
- IR 4228550, Degraded Insulation Identified on Wire on 2-6641-V90
- IR 4228555, D-2 EDG Pressure Switch Out of Tolerance
- IR 4228558, Temperature Switch Found Out of Tolerance
- IE 4228824, Pop-a-Plug Found Out in heat Exchanger
- IR 4228776, Worn Compression Fitting U2 EDG Air Start
- IR 4229004, U2 DG CWP Disc Check Valve Degraded Flange Faces
- IR 4229209, Broken EDG Oil Bath Stud
- IR 4229255, Priming Pump Out Operating When Local Button Depressed
- WO 01002305, Diesel Cooling Water Pump Motor Replacement
- WO 04678581, Replace U2 EDG ARC Suppression Diode 2-66012CR1A
- WO 04834085, D2 SAN TS Diesel Generator Fast Start Operability
- DOS 6600–01, Diesel Generator Surveillance Tests, Revision 142
- DMS 6600-02, Diesel Generator Mechanical Inspection and Preventative Maintenance, Revision 53
- DES 6600–08, Diesel Generator Electrical Maintenance Surveillance Inspection, Revision 41

71111.22—Surveillance Testing

- WO 04870760, D3 QTR TS PMP Test with Torus Avail for IST Data Surv
- DOS 1400–05, Core Spray System Pump Operability and Quarterly IST Test with Torus Available, Revision 55
- DOS 0500–01, Manual Scram Circuit Sensor Test, Revision 21
- DOS 0500–25, RPS Channels A1, A2, B1, and B2 Automatic Scram Contactor Test, Revision 16
- WO 04880276, D2/3 Qtr TS (IST) SGBT B Train Valve Timing
- DOS 7500–02, SGBT System Surveillance and IST Test, Revision 57

71151—Performance Indicator Verification

- Initiating Events Performance Indicators for IE01, IE03, and IE04 for the Period of 1st through 4th Quarter 2018
- IR 4199213, Unexpected Alarm: 903-7 B–5 Turbine Control Minor Trouble
- IR 4204937, EHX Leak Has Degraded Further
- NEI 99-02, FAQ 13-03, Final, Quad Cities Animal Intrusion
- NEI 99-02, FAQ 13-05, Final, Oyster Creek Downpower
- NEI 99-02 FAQ 15-02, Final, Prairie Island Power Change December 2014

- NEI 99-02 FAQ 17-01, Final, Grand Gulf June 2016 Power Change
- NEI 99-02 FAQ 17-02, Final, Palo Verde Unit 3 Scram
- NEI 99-02, FAQ 18-02, Rev.2, Watts Bar Critical Hours – Proposed NRC Response

71152—Problem Identification and Resolution

- IR 0688074, Problems Identified During DOS 6600–07
- IR 4198610, Relay Did Not Respond as Expected
- IR 4226764, WR for One Time Replacement Relay 2-67427Y1-23-1
- IR 4226765, WR for One Time Replacement Relay 2-67TDR-23-1
- IR 4226781, WR for One Time Replacement Relay 2-67231-SWGA-231-R19-27XTD
- IR 4226783, WR for One Time Replacement Relay 2-67459X1-24-1
- IR 4226785, WR for One Time Replacement Relay 2-67427Y1-24-1
- IR 4226787, WR for One Time Replacement Relay 2-67TDR-24-1
- IR 4226789, WR for One Time Replacement Relay 2-67241-SWGA-241-R19-27XTD
- IR 4226802, WR for One Time Replacement Relay 3-67459X1-33-1
- IR 4226806, WR for One Time Replacement Relay 3-67427Y1-33-1
- IR 4226808, WR for One Time Replacement Relay 3-67TDR-33-1
- IR 4226815, WR for One Time Replacement Relay 3-67331-SWGA-331-R19-27XTD
- IR 4226817, WR for One Time Replacement Relay 3-67459X1-34-1
- IR 4226819, WR for One Time Replacement Relay 3-67427Y1-34-1
- IR 4226821, WR for One Time Replacement Relay 3-67TDR-34-1
- IR 4226824, WR for One Time Replacement Relay 3-67341-SWGA-341-R19-27XTD
- IR 4226869, Agastat Relay (2-67459X1-23-1) Failure Analysis Report
- MA–DR–771–402, Unit 2 – 4 KV Tech Spec Undervoltage and Degraded Voltage Relay Routines, Revision 15
- ER–AA–200–1001, Equipment Classification, Revision 4
- Tyco Electronic Manual for AGASTA EGP/EML/ETR Series, Nuclear Qualified Control Relays, Revised March 2013
- WO 04303118–01, Repair Leak on 3B EHC Pump Discharge Pipe Union
- IR 4195191, U3 Small EHC Fluid Leak at Skid Accumulators Suction Line
- IR 4204937, EHC Leak has Degraded Further
- IR 4205166, U3 EHC Leaking Fitting Resolution
- MA–AA–716–010–1015, Planning Operational Critical Component (OPCC) Tasks, Revision 5
- MA–AA–716–010–1015, Operational Critical Component Work (OPCCW) Process, Revision 6
- ER–AA–2004, System Vulnerability Identification and Mitigation, Revision 10

71153—Follow-Up of Events and Notices of Enforcement Discretion

- Work Order 01838949-01
- WE-AA-104, Integrated Risk Management, Revision 25
- DOA 6100-03, Aux Power Transformer Trouble, Revision 21
- Drawing: 12E-2609, Wiring Diagram Reserve Auxiliary Transformer 22, Revision U
- Drawing: 12E-2377B, Schematic Diagram Reserve Auxiliary Transformer 22 Protection Relaying, Revision A