

# Dresden 2

## 2Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Control Loose Materials in the Protected Area**

The inspectors identified a finding of very low safety significance with no associated violation of regulatory requirements for the licensee's failure to control loose materials in the protected area. Specifically, on the morning of May 30, 2008, the inspectors identified loose materials that were tornado hazards in direct line of site to the Unit 2 and 3 main transformers and the Unit 3 reserve auxiliary transformer. High winds were forecast for that afternoon. Once notified, the licensee entered the issue into its corrective action program and removed the materials. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 20, 2007, because, if left uncorrected, the finding would become a more significant safety concern. The finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available.

Inspection Report# : [2008003](#) (*pdf*)

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to perform corrective action to mitigate excessive train unavailability for Auxiliary Electric Equipment Room Heating, Ventilation and Air Conditioning**

The inspectors identified a performance deficiency involving a non-cited violation of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," Section (a) (1), for the failure to take appropriate corrective action to mitigate excessive system unavailability of the Auxiliary Electric Equipment Room (AEER) ventilation system. The AEER heating, ventilation, and air conditioning (HVAC) system is designed to ensure adequate cooling to the AEER which contains several safety related systems, such as low voltage buses that provide power to mitigating systems. The Unit 2 and Unit 3 AEER ventilation systems have been classified 10 CFR 50.65 (a)(1) since the fourth quarter of 2005 with an established performance goal of no functional failures. Corrective actions to clean the condensing units before the onset of warm weather and cottonwood fuzz season were inappropriately rescheduled to mid-July. As a result, the AEER ventilation system air conditioning compressors tripped on high pressure on July 16 and 17, 2007, due to fouling of the condensing unit fins with cottonwood tree fuzz. The licensee's corrective actions included coding the cleaning of the condensing unit as a summer readiness activity for future work control implementation.

This finding was more than minor in accordance with IMC 0612, Appendix E, example 7.a due to the licensee's failure to take timely and effective corrective actions when goals were not met. The finding was considered to be of very low safety significance because the poor performance of this system had not resulted in an actual loss of a safety function of safety related equipment or resulted in an initiating event. The licensee would be able to reasonably perform controlled procedure steps to shutdown the reactor if AEER room temperature exceeded 104°F. The primary cause of this finding was related to the cross-cutting issue of Human Performance, Work Control. Specifically, the licensee did not plan work activities by incorporating environmental conditions which impacted plant structures, systems, and components. (H.3.(a))

Inspection Report# : [2007005](#) (*pdf*)

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### Mitigating Systems

**Significance:** **G** Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Fire Doors Failed Their Periodic Functional Test**

The inspectors identified a finding of very low safety significance that involved a Non-cited Violation of the Dresden Nuclear Power Station Renewed Facility Operating License of the Dresden Nuclear Power Station Renewed Operating License Conditions 2.E and 3.G. Two fire doors failed their periodic functional test to demonstrate that the doors could automatically close and were not declared inoperable and appropriate corrective actions were not taken in a timely manner. The door between auxiliary electric equipment room and the Unit 3 cable tunnel (Door 168) failed its functional test on June 9, 2007, and was not repaired until June 18, 2007. The fire door separating the Isolation condenser make-up pumps (Door 2001) failed its functional test on May 9, 2007, and was not repaired until May 23, 2007. The licensee changed the surveillance test procedure to ensure that the doors would be declared inoperable if the test failed in the future.

The inspectors concluded, using Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Violations," issued on September 20, 2007, that this finding was more than minor by reviewing example 5.b, in that the equipment was found in an inoperable condition but was returned to service. The inspectors determined that this issue was of very low safety significance because the doors were in very low traffic areas and the probability of the doors being open if a fire were to occur or that someone would pass through either door during a fire scenario was low. The inspectors determined that this issue affected the cross-cutting area of Human Performance because the licensee failed to provide a complete and accurate surveillance test procedure that reflected actual design and license requirements H.2.(c).

Inspection Report# : [2008003](#) (*pdf*)

**Significance:** **G** Mar 28, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Acceptance Criteria for Stem Factor in MOV Testing Did Not Account for Uncertainty**

The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for failure to include an uncertainty value, to account for test equipment accuracy and lubricant degradation, in the acceptance criteria for the stem factor in the diagnostic test of MOV 3-2301-3, "Unit 3 high pressure coolant injection (HPCI) steam admission valve." The stem factor is used to calculate the coefficient of friction (COF) to determine the predicted stroke opening time of the MOV under design basis conditions. Corrective actions for this issue included a re-calculation of the stem factor to account for instrument accuracy and lubricant degradation and an evaluation for guidance to be added to the test procedure.

This finding was more than minor because, if the finding was left uncorrected it would become a more significant safety concern. Specifically, the acceptance criteria specified in the diagnostic test for the stem factor did not assure that MOV 3-2301-3 would meet its design stroke time value to open in less than or equal to 30 seconds. The finding was of very low safety significance based on a Phase 1 screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," because the finding did not result in an actual loss of a safety function. (Section 4OA2.a)

Inspection Report# : [2008008](#) (*pdf*)

**Significance:** **G** Mar 28, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Develop a Pre-Fire Plan for Fire Zone 18.6**

The inspectors identified an NCV for the licensee's failure to develop a pre-fire plan for fire zone 18.6. The finding was a violation of Dresden Nuclear Power Station Renewed Operating License. License conditions 2.E and 3.G for Unit 2 and Unit 3, respectively, of the Dresden Nuclear Power Station Renewed Facility Operating Licenses state, in part, that: "The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report (UFSAR) or the facility...." Pre-fire plans are described in the UFSAR as "provided for all safety-related areas of the plant." Corrective actions by the licensee included the development of a pre-fire plan for fire zone 18.6.

The finding was more than minor because it involved the Mitigating Systems attribute of protection against external factors (i.e. fire), where the failure to develop a pre-fire plan for fire zone 18.6 could have adversely impacted the fire brigade's ability to fight a fire. As such, this finding impacted the Mitigating Systems objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. As discussed by IMC 0609, Appendix A, Attachment 0609.04, issues related to performance of the fire brigade are not included in IMC 0609, Appendix F, "Fire Protection SDP," and require management review. Therefore, the finding was reviewed by NRC management, and was determined to be a finding of very low safety significance (Green) because no safe shutdown equipment was located in this fire zone. The inspectors determined that this issue also affected the cross-cutting area of problem identification and resolution, CAP aspect P.1(c) because the licensee failed to thoroughly evaluate a problem previously identified by NCV 05000237/2006011-01; 05000249/2006011-01, "Licensee's failure to develop a pre-fire plan for fire zone 8.2.6.A, elevation 534'," such that the resolution did not fully address causes and extent of condition. (Section 40A2.a)

Inspection Report# : [2008008](#) (pdf)

**Significance:**  Feb 15, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform Periodic Trip Tests on Thermal Overload Heaters.**

Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control." Specifically, the licensee failed to identify and periodically perform the necessary testing on safety-related thermal overload relays/heaters (TOLs), installed in 1993, in the alternate power feed to isolation condenser reactor inlet valves 2-1301-4 (Unit 2) and 3-1301-4 (Unit 3). Periodic testing of the TOLs is required to ensure the valves can perform their Appendix "R" safe shutdown functions, when required. Upon discovery, the licensee entered the issue into its corrective action program, initiated predefine parameters (PMID) and created surveillance work orders to test the TOLs at the next opportunity. There was not a cross-cutting aspect to this violation.

This issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because the finding was associated with the "Equipment Performance" attribute of the Mitigating Systems Cornerstone and 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 finding was of very low safety significance because the finding did not represent an actual loss of functionality of the isolation condenser system containment isolation valves. (Section 1R05.7)

Inspection Report# : [2008006](#) (pdf)

**Significance:** SL-IV Dec 18, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform a 10 CFR 50.59 evaluation for exceeding continuous rating on the EDG.**

The inspectors identified a Severity Level IV NCV associated with the failure to perform a safety evaluation in accordance with 10 CFR 50.59. Specifically, the licensee failed to perform a safety evaluation when non-conservatively changing the design basis loading for the emergency diesel generators (EDG) in the design calculation. This resulted in the expected loading during a design basis accident no longer being bounded by the EDG endurance testing requirements contained in the Technical Specifications (TS). Because the licensee did not also evaluate the effect on the existing endurance test loading requirements, the testing no longer adequately verified the capability of the EDG to power its predicted loading during a LOOP/LOCA. This adverse change increased the probability of a malfunction of equipment important to safety EDG during a LOOP/LOCA event.

Because the issue affected the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that the change in EDG loading, which adversely affected equipment important to safety, would not have ultimately required NRC approval. The finding was determined to be of very low safety significance (Green) based on the results of the SDP Phase 1 screening worksheet. Specifically, the licensee was eventually able to demonstrate through an engineering evaluation, that the EDG loads would not exceed the bounding values contained in the endurance test criteria. The inspectors determined that there was no cross cutting aspect to this issue. (Section 1R21.b.1)

Inspection Report# : [2008007](#) (pdf)

**Significance:**  Dec 18, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to meet the EDG Power Factor Testing Requirement**

The inspectors identified an NCV for the failure to meet the requirements contained in SR 3.8.1.15. Specifically, the testing that the licensee performed to meet SR 3.8.1.15 did not test to a power factor as close to the accident load power factor as possible. These testing methods did not demonstrate the capability of the EDG to support the emergency core cooling system loading and were non-conservative. The issue was entered into the licensee's corrective action program.

The issue was more than minor because it was associated with the Mitigating System Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability and reliability of the EDGs. Specifically, the licensee's testing methods for SR 3.8.1.15 did not demonstrate the capability of the EDG to support ECCS loading and was non-conservative. This finding was of very low safety significance, because the inspectors answered ANo to all five questions under the Mitigating Systems Cornerstone column of the Phase 1 worksheet. Specifically, the licensee subsequently performed the required testing in SR 3.8.1.15 to the expected power factor, and the EDGs performed satisfactorily. The inspectors determined that there was no cross-cutting aspect to this issue. (Section 1R21.b.2)

Inspection Report# : [2008007](#) (pdf)

**Significance:**  Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct Issues with the Operation and Testing of the Isolation Condenser Emergency Make-up Pump**

The inspectors identified a performance deficiency involving a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," having very low safety significance for the failure to promptly identify and adequately correct issues with the operation and testing of the isolation condenser emergency make-up pump. The licensee's corrective actions for this issue included restoring the inventory of hoses and connectors to the appropriate number, sizes, and locations.

This finding was more than minor because it involved the equipment performance and procedure quality attributes of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was of very low safety significance based on the low initiating event probability and, because of the slow onset of the flooding and the reduced decay heat in the reactor core at the time recovery actions would be necessary, the licensee would be able to reasonably perform recovery actions that would prevent core damage. The primary cause of this finding was related to the cross-cutting issue of Problem Identification and Resolution, Corrective Action Program, because the licensee failed to take appropriate corrective actions to address safety issues in a timely manner, commensurate with their safety significance and complexity (P.1.(d)).

Inspection Report# : [2007004](#) (pdf)

**Significance:** SL-IV Sep 30, 2007

Identified By: NRC

Item Type: VIO Violation

### **Inadequate Reactor Operators Shift Turnover**

The inspectors identified a performance deficiency involving a Severity Level IV violation of Technical Specification 5.4.1, Operating Procedure OP-AA 112-101, and Operator Aid #159, when two licensed Nuclear Station Operators deliberately failed to follow station procedures on January 16, 2007, during the Unit 2 operations shift turnover. At the time of this event, Unit 2 was in an elevated risk profile (yellow) due to various plant components being taken out-of-service. This increased risk profile amplified the importance of knowing and understanding plant conditions. The licensee's corrective actions included: 1) the Unit Supervisor had an alternate operator relieve the on-coming operator involved with improper turnover, 2) the licensee convened a fact finding investigation to determine the facts of the

event, 3) the operators at the facility to the importance of proper shift turnover, and 4) the licensee took disciplinary action toward the two individuals.

The NRC Office of Investigations conducted an investigation which concluded that the two Nuclear Station Operators deliberately failed to complete shift turnover and relief procedures. This issue was evaluated using the traditional enforcement process. The violation was categorized in accordance with the NRC Enforcement Policy. The failure to follow the shift turnover procedure, absent willfulness, had no actual safety consequences, and constitutes a minor violation. Considering willfulness on the part of the operators, a Severity Level IV violation is warranted. The violation is being cited because it was willful and was identified by the NRC.

Inspection Report# : [2007004](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Jun 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Verify the Adequacy of Design Information Provided By a Vendor**

A self-revealed finding of very low significance was identified involving a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to completely verify the adequacy of design information provided by a vendor. The deficiency existed between August 23, 2006 and December 22, 2006. The corrective actions for this finding involved requiring the Exelon Nuclear Fuel division to perform the design analysis reviews for core reloads on the future.

The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 20, 2007, because, if left uncorrected, the finding would become a more significant safety concern; the finding is considered to be of very low safety significance because it was based on a design deficiency that was confirmed by the inspectors not to result in loss of operability. The primary cause of this finding was related to the cross-cutting issue of Human Performance, "Work Practices," because the licensee did not ensure supervisory and management oversight of contractor work activities, such that nuclear safety was supported. (H.4.(c))

Inspection Report# : [2008003](#) (*pdf*)

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Take Corrective Actions to Repair Unit 3B Refuel Floor Fuel Pool Area Radiation Monitor in a Timely Manner**

On May 9, 2007, a performance deficiency involving a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and adequately correct deficiencies with the Unit 3B Refuel Floor Fuel Pool Area Radiation Monitor (ARM) was self-revealed. The licensee's corrective actions for this issue included replacing associated degraded cables and the radiation monitor's detector on May 10, 2007, and discussing with the ARM system manager the importance of applying adequate technical rigior.

The inspectors concluded that the finding was greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on September 20, 2007, because the failure to take corrective actions evaluated and described in a root cause or common cause assessment to prevent an unnecessary challenge to a safety system could result in a more safety significant issue. This deficiency unnecessarily challenged a safety system and could have affected the availability and capability of components and systems that respond to initiating events. The issue was of very low safety significance because there was no actual event in progress.

Inspection Report# : [2007005](#) (*pdf*)

**Significance:** G Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Standby Gas Treatment 'A' Train Exhibiting Flow Oscillations**

A performance deficiency involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was self-revealed following 2/3A standby gas treatment (SBGT) train flow controller settings and post maintenance testing which did not ensure that the system would perform satisfactorily in service. The maintenance and testing on the 2/3A SBGT system from September 10 through 13, 2007, did not challenge controller operation because the reactor building ventilation system was also operating during these activities. As a result, SBGT system oscillations were identified a few days later on September 17, 2007, during system operation. Corrective actions by the licensee include revising test procedure DOS 7500-02 to include required test conditions to test the standby gas treatment system in the expected post accident configuration without reactor building ventilation operating.

The inspectors concluded that the finding was greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," issued on September 20, 2007, because it impacted the Barrier Integrity Cornerstone (containment) objective. The failure to perform adequate post maintenance testing on systems, structures or components (SSC) can result in SSC not performing satisfactorily in service. The issue was of very low safety significance because the 2/3B SBGT train remained operable and available. This finding has a cross-cutting aspect in the area of human performance (resources) because the licensee did not provide accurate procedures to plant personnel. (H.2(c))

Inspection Report# : [2007005](#) (*pdf*)

**Significance:** G Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Unit 2/3 Standby Gas Treatment Auto-started and a Unit 2 and 3 Reactor Building Ventilation Isolation Occurred**

On November 9, 2007, a performance deficiency involving a non-cited violation of TS 5.4.1 was self-revealed when a nuclear station operator (NSO) was performing Dresden Operating Procedure (DOP) 0500-03, "Reactor Protection System Power Supply Operation," Revision 36. The NSO did not verify that the area radiation monitor's (ARM) power supply voltage was normal and did not reset all trips on the ARM modules prior to removing an installed jumper which bypassed the trips. As a result, the reactor building ventilation system for both units tripped when the NSO removed the jumper. This required entry into TS 3.6.4.1 Limiting Condition of Operation, Action A for reactor building low differential pressure. The operator had been provided with a marked up copy of the procedure, assigned a concurrent verifier, and briefed on jumper placement and removal and on the use of concurrent verification prior to the event. As an immediate corrective action, the individual was temporarily removed from licensed shift duties. The operations department also modified the pre-job brief for this evolution to include the lessons learned and revised procedure DOP 0500-03.

The finding was greater than minor because it impacted the SSCs attribute of the Barrier Integrity cornerstone objective. The finding was of very low safety significance because it impacted the reactor building differential pressure for a time period of less than one hour. This finding affected the cross-cutting area of Human Performance, "Work Practices," because the NSO failed to utilize human performance error prevention techniques required to safely implement the station procedure. Specifically, the NSO did not practice self-checking and procedure adherence, and failed to use peer checking. (H.4(a))

Inspection Report# : [2007005](#) (*pdf*)

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

# Public Radiation Safety

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Significance: Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

## **Failure to Continuously Sample the Unit 2 and 3 Chimney for Particulate and Iodine Effluents**

A self-revealed finding of very low safety significance and an associated violation of NRC requirements were identified for the failure to continuously sample the Unit 2 and 3 chimney effluent for particulate and iodine radioactivity. Specifically, for an approximate 4-hour period on July 21, 2007, the primary particulate and iodine effluent sampling system for the chimney was inadvertently rendered inoperable and the licensee failed to establish continuous sampling with auxiliary sampling equipment. Corrective actions taken by the licensee included tailgate training, procedure revisions and the installation of hardware on the effluent monitor panel to reduce the potential for a configuration control problem.

The issue was more than minor because it was associated with the Facilities/Equipment and Program/Process attributes of the Public Radiation Safety Cornerstone, and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactivity released into the public domain. The inspectors determined that the issue resulted in a failure to satisfy offsite dose calculation manual (ODCM) sampling requirements for an approximate four hour period and represented a finding of very low safety significance because the licensee was able to estimate the effluent release during the period when sampling was interrupted and to determine that the effluent dose during that short period was within regulatory limits and met the effluent dose design objectives of 10 CFR Part 50, Appendix I. A non-cited violation of Technical Specification 5.5.1 and 5.5.4 was identified for failure to satisfy ODCM effluent sampling requirements. The inspectors also determined that the finding had a cross-cutting aspect in the human performance area for inadequate work controls to ensure job site conditions, including environmental conditions that may impact human performance, plant components and the human-system interface did not adversely impact plant operations.

Inspection Report# : [2007005](#) (*pdf*)

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## Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

Last modified : August 29, 2008