

## Dresden 2

# 3Q/2006 Plant Inspection Findings

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## Initiating Events

**Significance:**  Sep 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Unit 2 Isolation Condenser Declared Inoperable Due to Inadequate Backfilling of Instrument Sensing Lines**

A performance deficiency involving a non-cited violation of Technical Specification (TS) 5.4.1 was self revealed after the Unit 2 reactor scram on July 4, 2006. The licensee's root cause report determined that the cause of scram was that the Unit 2 inboard main steam isolation valve, (MSIV) 2-203-1A, drifted closed. The pilot air sensing line tubing to the 2-203-1A valve separated from the compression fitting holding it in place. The tubing slipped out of the compression fitting because the fitting was either improperly installed or the fitting may have been too big for the tubing installed.

The finding was greater than minor because it was a precursor to a significant event. The finding was of very low safety significance because all the equipment necessary to mitigate the transient worked as expected. Corrective actions included, 1) the fitting was reinstalled with the correct parts and was leak checked; 2) seven other fittings on the inboard and outboard Unit 2 MSIVs were leak checked with satisfactory results; 3) the fittings on both units will be removed and checked for proper parts during the next refueling outages; 4) MSIV model work orders will be updated to include "Tube Fitting Repair and Replacement Instruction," and include the instructions in work orders where compression fittings are identified.

Inspection Report# : [2006010\(pdf\)](#)

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## Mitigating Systems

**Significance:**  Sep 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Mispositioning of Control Rod During Single Notch Timing**

On July 30, 2006, a performance deficiency involving a non-cited violation of TS 5.4.1 was self revealed when two nuclear station operators (NSOs) failed to exercise appropriate three-way communication and second verification, resulting in the movement of control rod C-9 to an incorrect position during the performance of Dresden Operating Surveillance (DOS) 0300-04, "Control Rod Drive Timing," Revision 39.

The finding was greater than minor because it impacted the human performance attribute of the Reactor Safety Mitigating Systems Cornerstone objective to ensure reliability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the mispositioned rod did not significantly increase reactivity to a point where power limits were challenged. Corrective actions for this event included: 1) all licensed operators were to take part in a dynamic learning activity in the simulator involving control rod operations and communications; 2) the shift manager was required to be in the control room during all non-emergency control rod moves; 3) the unit supervisor was required to provide direct overview in the "horseshoe" area of the control room during all non-emergency control rod movements; 4) each shift manager was required to perform a paired observation with the crew unit supervisors specifically focused on communications and verification techniques. The primary cause of this finding was related to the cross-cutting issue of human performance (work practices) because the human performance prevention techniques provided to the NSOs, such as three-way communication and a second verifier were not effective in preventing this error.

Inspection Report# : [2006010\(pdf\)](#)

G**Significance:** Sep 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Include Adequate Instructions for Fitting Reassembly in Main Steam Isolation Valve Work Package**

A self-revealing finding involving a non-cited violation of Technical Specification 5.4.1 was identified on February 1, 2006, due to the licensee's failure to include essential information in DOP 1300-11, "Unit 2 Isolation Condenser Fill and Vent," Revision 12, regarding backfilling of the sensing lines after completion of the filling of the isolation condenser piping. This procedural deficiency resulted in the isolation of the flow paths of the isolation condenser for an extended period of time (approximately 22 hours) and online risk changed from Green to Yellow.

This finding was considered more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance because even though the flow paths of the isolation condenser were isolated and online risk changed from Green to Yellow, the flow paths could have been restored manually by operator actions. Corrective actions by the licensee included revising procedures DOP 1300-10, "Unit 3 Isolation Condenser Fill and Vent," Revision 19, and DOP 1300-11 to include DPIS 2(3)-1349A and B sensing line backfilling following system piping filling and venting. The primary cause of this finding was related to the cross-cutting issue of human performance (resources) because the licensee did not provide complete, accurate and up-to-date procedures to plant personnel.

Inspection Report# : [2006010\(pdf\)](#)G**Significance:** Jun 29, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Identify an Inoperable 3-hour Fire Barrier Wall in the Unit 2 EDG Day Tank Room**

On May 1, 2006, the inspectors identified a non-cited violation of Unit 2 Operating License Condition E, Fire Protection Program, for failure to identify and correct a degraded fire barrier wall. The inspectors identified a wall gap in the Unit 2 emergency diesel generator day tank room. The gap was in a 3-hour fire rated wall, separating the Unit 2 diesel fuel oil day tank room from the Unit 2 reactor feed pump room. As corrective action, the licensee established a firewatch, entered the issue into the corrective action program, and repaired the gap in the wall.

The finding was greater than minor because it affected the protection against external factors attribute of the Mitigating Systems cornerstone objective. However, the finding was of very low safety significance due to no credible fire scenarios developing that would have affected the safe shutdown of Unit 2, and due to the relatively negligible combustible loading in the area of the gap. The inspectors also concluded that this finding affected the cross-cutting issue of human performance (personnel).

Inspection Report# : [2006007\(pdf\)](#)G**Significance:** Jun 29, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Unit 2 350 psig Reactor Low Pressure Emergency Core Cooling System Permissive Switch Out-of-tolerance During Surveillance Testing**

On May 15, 2006, a finding involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, was identified by the inspectors. The licensee failed to identify a condition adverse to quality where the Unit 2 350 psig reactor low pressure emergency core cooling system (ECCS) permissive pressure switch was found outside the Technical Specification (TS) allowable tolerance range repeatedly. The licensee's actions lacked prioritization in determining the cause of the out-of-tolerance of the 2-0263-52B permissive pressure switch. Also, the licensee failed to assign timely corrective actions to evaluate the cause of the switch's repeated TS surveillance test failures.

The finding was greater than minor because it impacted the equipment performance attribute of the Mitigating System cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. As corrective action, the licensee created action items to address the repeat failures of the 2-0263-52B switch to meet its TS requirements. The licensee wrote Issue Report (IR) 495327, "Trending IR for 2-0263-52B exceeds TS 6 of 9

Surveillances,” to identify why this adverse trend was not entered into the corrective action system. As immediate corrective action, the licensee reduced the surveillance frequency to adequately monitor the switch’s performance. The licensee also required all system managers and first line supervisors to review the station procedure for the instrument performance trending program, and implemented a manufacturer’s recommendation to use smaller step changes in applied pressure to improve set point accuracy. The finding was of very low safety significance because the other permissive switch 2-0263-52A was always operable. Therefore, the switch’s safety function and ability to permit reactor low pressure ECCS injection were maintained. The primary cause of this finding was related to the cross-cutting issue of problem identification and resolution (corrective action).

Inspection Report# : [2006007\(pdf\)](#)

Inspection Report# : [2006010\(pdf\)](#)

**Significance:**  Jun 29, 2006

Identified By: NRC

Item Type: FIN Finding

### **Unit 2 High Pressure Coolant Injection (HPCI) System Declared Inoperable**

A finding was self-revealed when an instrument maintenance technician shorted a power lead while performing modification work that resulted in the Unit 2 high pressure coolant injection system becoming inoperable for 2 hours and 14 minutes on April 6, 2006. No violation of NRC requirements was identified.

This finding was more than minor because it involved the attribute of equipment performance of the Mitigating Systems objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the high pressure coolant injection system was inoperable for a short time period and could have been manually controlled in the event of an accident. The individual was counseled for a lack of attention to detail and the entire instrument maintenance department was made aware of this error. This finding affected the cross-cutting issue of human performance (personnel).

Inspection Report# : [2006007\(pdf\)](#)

**Significance:**  Jun 29, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Standby Liquid Control Valves Installed In The Plant Different than those Assumed in a Design Calculation**

On May 5, 2006, the inspectors identified a finding involving a non-cited violation of 10 CFR 50.62 associated with a licensee-identified material condition, and having very low safety significance. The licensee identified that the inputs to a design analysis (DRE01-0066, “Dresden Unit 2 & 3 Standby Liquid Control System Discharge Piping Pressure Drop,” Revision 1) were non-conservative. Some of the valves installed in the plant were not the same type of valves assumed to be installed in the design analysis. This ultimately resulted in a change in a design calculation that demonstrated that standby liquid control system relief valves could lift upon system initiation during an anticipated transient without scram (ATWS) event.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the standby liquid control system could be recovered during an ATWS event. Cycling of the relief valves would not prevent most of the borated solution from being injected into the reactor pressure vessel, and the licensee was able to demonstrate that the reactor remained within the acceptance criteria of their original ATWS analysis even if no boron solution was injected into the reactor pressure vessel while the relief valves lifted. The licensee planned to use a more enriched form of boron so that one pump could be used to meet the 10 CFR 50.62 requirements. This enriched boron would replace the current boron in the storage tanks in the next refueling outages. This issue was a non-cited violation of 10 CFR 50.62.

Inspection Report# : [2006007\(pdf\)](#)

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Perform Weld Inspections by Independent Certified Quality Verification Inspectors**

On February 19 and March 12, 2006, a performance deficiency involving a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors. The finding involved the licensee's failure to follow procedures, in that, approximately 110 safety related welds were not inspected by independent, certified Quality Verification inspectors between December 2, 2002, and May 23, 2003.

This finding was greater than minor because, if left uncorrected, the finding would become a more significant safety concern. The failure to perform adequate safety-related weld exams could have allowed undetected deficiencies to be placed into or have remained in service. The inspectors determined that the finding could not be evaluated using the SDP in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," because the SDP for the Mitigating Systems Cornerstone only applied to degraded systems/components, not to deficiencies associated with the procedures that are designed to detect component degradation. Therefore, the finding was reviewed by regional management in accordance with IMC 0612, Section 05.04c, "Screen for Significance," and was determined to be of very low safety significance. In addressing this issue, the licensee terminated this program, generated an issue report, and planned to inspect 100 percent of the identified welds.

Inspection Report# : [2006003\(pdf\)](#)

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Installation of Various Lighting Fixtures Without Using Plant Modification Process**

On January 27, 2006, a performance deficiency involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified by the inspectors. The finding involved the licensee's failure to use the plant modification process, when installing new design lighting fixtures, to ensure Seismic Category II over Seismic Category I requirements were met when installing these fixtures in various areas of the plant, including the Unit 3 emergency diesel generator room.

The finding was greater than minor because, if left uncorrected, the licensee's practice of modifying the plant without using the modification process would become a more significant safety concern because safety related and safe shutdown equipment could become inoperable. Also, the finding impacted the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. The finding was of very low safety significance because the licensee determined, through engineering evaluation, that the deficient lighting fixture installations did not adversely affect the operability of any important systems. In addressing this issue, the licensee immediately prevented the installation of additional lighting fixtures without engineering review and approval; thoroughly walked down all areas of the plant to identify the full extent of condition of the problem; corrected all of the deficiencies; and prepared an engineering evaluation to assess the impact of these deficiencies on safety related and safe shutdown equipment.

Inspection Report# : [2006003\(pdf\)](#)

**Significance:**  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Revision to Work Order Instructions Resulted in the Temporary Loss of Shutdown Cooling**

On November 6, 2005, a performance deficiency involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed when a loss of shutdown cooling occurred while maintenance activities were being performed on the unit auxiliary transformer. Maintenance planning personnel failed to ensure that a revision to work order instructions, associated with the removal of an electrical lead (jumper) from the unit auxiliary transformer, remained bounded by the clearance order boundary for the reserve auxiliary transformer. As a result of lifting the lead, the associated 4160 volt bus de-energized and caused a trip of the A shutdown cooling pump which was providing decay heat removal for the reactor coolant system. In addressing this issue, the licensee conducted an apparent cause evaluation, added this event to their lessons learned database, and generated separate work orders for each transformer.

The finding was greater than minor because, if left uncorrected, the licensee's failure to ensure revised work order instructions remain bounded by the existing clearance order boundary would become a more significant safety concern by resulting in excessive heatup of the reactor coolant system or rendering safety related equipment inoperable. In evaluating this issue through the SDP, the inspectors answered "No" to all three questions that require phase 2 and 3 analyses. The finding did not increase the likelihood of a loss of reactor coolant system inventory; did not degrade the licensee's ability to

terminate a leak path or add reactor coolant system inventory; and did not degrade the licensee's ability to recover decay heat removal once it was lost. In addition, the reactor coolant system temperature only increased by two degrees, from 92 degrees to 94 degrees, before shutdown cooling was re-established to the reactor vessel. Therefore, the inspectors determined that this finding was of very low safety significance.

Inspection Report# : [2006003\(pdf\)](#)

**Significance:**  Jan 20, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify Inadequate Procedure for Surveillance of Remote Shutdown Emergency Lights**

The inspectors identified an NCV of Technical Specification (TS) 6.8.A.1, which required that written procedures be implemented covering the activities in the applicable procedures recommended by Regulatory Guide 1.33, including procedures for surveillances. The surveillance procedure for testing Appendix R, safe shutdown emergency lighting was inadequate because it failed to use an approved testing method of the Technical Requirements Manual (TRM). The licensee entered this performance deficiency into the CAP for resolution.

This finding is associated with the Mitigating Systems Cornerstone. The finding was greater than minor because the lack of emergency lighting could result in a delay in accomplishing safe shutdown actions. The finding was of very low safety significance because of the availability of portable head lamps.

Inspection Report# : [2006002\(pdf\)](#)

**Significance:**  Jan 06, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Water intrusion in the high pressure coolant injection system steam supply line.**

The NRC identified a NCV for the failure to properly evaluate extended power uprate for its impact on post-scrum reactor vessel water level to prevent water intrusion into the HPCI steam supply line. The NRC concluded that EGC implemented extended power uprates on Unit 2 in 2001 and Unit 3 in 2002, but failed to verify the adequacy of design of the implementation of extended power uprate to respond to changes in post-scrum reactor vessel water level to prevent water intrusion into the HPCI steam supply line. This violation was identified as a result of the inspectors' review of the January 30, 2004, scram event. Water intrusion into the HPCI system turbine steam supply line occurred as a result of the scram and rendered the HPCI system inoperable. The NRC determined that EGC was in violation during 2001 through 2004, however, the violation was identified and corrective actions were taken after the January 2004 scram event. After considering the information developed during the inspection and the additional information provided in a March 6, 2006, letter from the licensee, the NRC concluded that the final significance of the finding is appropriately characterized as Green

Inspection Report# : [2004002\(pdf\)](#)

Inspection Report# : [2005014\(pdf\)](#)

Inspection Report# : [2006008\(pdf\)](#)

**Significance:**  Nov 01, 2005

Identified By: NRC

Item Type: FIN Finding

### **Identification of Electromatic Relief Valve (ERV) Degradation**

The inspectors identified a failure to enter discrepancies into the corrective action program that were previously identified in work orders associated with the electromatic relief valves (ERVs) during the 2005 Unit 2 and 2004 Unit 3 refueling outages. This information was important for confirming the operability of the relief valves following the discovery of degraded ERVs at the Quad Cities Station.

The finding was greater than minor because if left uncorrected, the extent of degradation of ERVs would not be fully identified or evaluated which could result in inappropriately concluding that equipment important to safety was operable. The inspectors concluded that the finding impacted the Mitigating Systems Cornerstone. The inspectors determined that the finding did not result in an actual loss of a safety function; and concluded that this issue was of very low safety significance.

Inspection Report# : [2006002\(pdf\)](#)

## Barrier Integrity

**Significance:**  Jun 29, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Post Protective Pathway Signs During Unavailability of Torus to Reactor Building Vacuum Breaker**

On May 15, 2006, the inspectors identified a non-cited violation 10 CFR 50.65 (a) (4), having very low safety significance associated with inadequate management of risk. While working on the Unit 2 1601-20B reactor building to torus vacuum breaker relief valve, the Unit 2 risk status was designated as “yellow” and would have gone to “red” if the 2-1601-20A valve was also taken out-of-service. The 2-1601-20A vacuum relief valve was not clearly indicated as a protected pathway as required by station work control procedures and station personnel were not notified of the 2-1601-20B “yellow” risk status through any of the normal administrative methods.

This finding was more than minor because this issue, if left uncorrected, could have become a more significant safety concern. Had the availability of the 2-1601-20A valve been affected, plant risk would have been elevated to a “red” condition. The plant risk model did not show that this equipment was required to have a protected pathway on the redundant equipment. In addition, during the extent of condition review, the licensee identified that six additional pieces of plant equipment should have indicated the requirement for protected pathways, but did not. The licensee corrected both these conditions. The inspectors evaluated this finding using IMC 0609, “Significance Determination Process,” and concluded the issue was of very low safety significance (Green) because no actual degradation of the barriers occurred. This finding affected the cross-cutting issue of human performance (resources).

Inspection Report# : [2006007\(pdf\)](#)

## Emergency Preparedness

## Occupational Radiation Safety

**Significance:**  Sep 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Satisfy Technical Specification LHRA Access Requirements During Entry Into a Steam Sensitive Area at Power**

A self-revealed finding of very low safety significance, and an associated violation of NRC requirements were identified for the failure to satisfy Technical Specification requirements for access into a high radiation area with dose rates in accessible areas greater than 1000 mrem/hour. As a result, a worker was allowed to enter a steam sensitive area at power that was controlled as a locked high radiation area (LHRA), without adequate recognition of the area radiological conditions and without positive radiological control over the activities within the area. The electronic dosimetry (ED) worn by the worker alarmed when significantly higher than expected dose rates were encountered, resulting in some unnecessary dose to that worker.

The issue was more than minor, because it was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone, and affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. The issue represents a finding of very low safety significance because it did not involve ALARA Planning or work controls, there was no overexposure, nor did a substantial potential for an overexposure exist given the radiological conditions in the area and the worker’s response to the ED alarm. Also, the licensee’s ability to assess worker dose was not compromised. A Non-Cited Violation of TS 5.7.1 was identified for the failure to comply with the requirements for access into a high radiation area with dose rates accessible to personnel greater than 1000 mrem/hour.

Corrective actions taken by the licensee included modification to the survey maps for steam sensitive areas, tagging of certain LHRA keys to remind radiation protection staff to coordinate entries into these areas with operations staff, and plans to reevaluate the radiation protection department practices for entry into steam sensitive areas, and in general for entry into high radiation areas with the potential for significant dose rate gradients.

Inspection Report# : [2006010\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

[Physical Protection](#) information not publicly available.

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## Miscellaneous

Last modified : December 21, 2006