

Dresden 2

3Q/2007 Plant Inspection Findings

Initiating Events

Significance:  May 04, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Risk Assessment That Led to a Reactor Scram

A performance deficiency involving a Non-Cited Violation of 10 CFR 50.65(a)(4) was self-revealed after the Unit 2 reactor scram on May 4, 2007. The licensee failed to adequately assess and manage the risk associated with emergent work. The licensee's root cause report determined that the cause of the scram was a loss of feedwater due to closure of the condensate pre-filter isolation and bypass valves. The condensate pre-filter programmable logic controller central processing unit (CPU) had failed and work was in-progress to replace the CPU. The performance of this work caused the valve closure. Corrective actions included: 1) the CPU card was replaced with vendor support and the programmable logic controller (PLC) was restarted; 2) a standing order on risk management treatment of condensate pre-filter PLC hardware activities was initiated; 3) actions for design engineering to develop a design specification for the condensate pre-filter valve CPU software were assigned; and 4) actions to proceduralize the requirements associated with performing condensate pre-filter troubleshooting, maintenance activities and system restoration were initiated.

The finding was greater than minor because the maintenance that was performed resulted in an initiating event. The finding was of very low safety significance because all the equipment necessary to mitigate the transient worked as expected. 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 staff were not adequately followed. Personnel proceeded in the face of uncertainty and unexpected circumstances by not following a conservative decision making process (H.4.(a)).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Oct 06, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Inappropriate Basis in 10 CFR 50.59 Evaluation for Temporary Modification

The inspectors identified a Severity Level IV Non-Cited Violation (NCV) of 10 CFR 50.59 "Changes, Tests, and Experiments," having very low safety significance (Green) for the licensee's failure to perform an adequate safety evaluation review for changes made to the facility per Temporary Modification EC TCCP 354622. Specifically, the licensee failed to appropriately evaluate the installation of a temporary jumper at the Electro-Hydraulic Control (EHC) Card 2-5640-A37 to bypass the function of the "A" Main Steam Pressure Regulator (MSPR). The licensee's 10 CFR 50.59 safety evaluation 2005-01-001 failed to provide a basis as to why the activity which bypassed one of the two MSPRs did not present more than minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR).

Inspection Report# : [2006012](#) (*pdf*)

Significance:  Sep 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Issues With the Operation and Testing of the Diesel Driven Pump Used to Respond to External Flooding

On September 7, 2006, the inspectors identified 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 issues with the operation and testing of the isolation condenser emergency make-up pump until prompted by the

inspectors. The pump is designed to ensure an adequate supply of make-up water to the isolation condenser during flood conditions to prevent core damage. Specifically, the licensee failed to ensure adequate corrective actions were taken to test the pump to its design limits, and failed to identify deficiencies with the suction hose to eliminate friction losses in the suction line. The licensee missed an opportunity to re-evaluate the losses in the suction line when the required flowrate was increased to 350 gpm in 2003 as a result of extended power uprate and consequently, failed to ensure that equipment associated with the pump was sized adequately for execution of the pump's safety function. The licensee's corrective action for this issue included increasing the margin in net positive suction head (NPSH) by increasing the size of the pump suction line to a 30-foot length of 4-inch diameter hose, eliminating restrictions in the flowpath to the isolation condenser, and planning to review DOA 0010-04 and revise the procedure as appropriate to address the height above the water to which the pump could be elevated to maintain NPSH.

This finding was more than minor because it affected 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 and adverse trends in a timely manner, commensurate with their safety significance and complexity (P.1(d)).

Inspection Report# : [2007003](#) (pdf)

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

Mitigating Systems

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 licensee increased the awareness of 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*)

Significance: SL-IV Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Change of Systems Credited to Mitigate a High Pressure Coolant Injection Pump Room High Energy Line Break

The inspectors identified a finding having very low safety significance and an associated Severity Level IV Non-Cited Violation (NCV) of 10 CFR 50.59 for the licensee's failure to perform an adequate safety evaluation review for changes made to the facility per safety evaluation 2005-02-001. Specifically, the licensee failed to provide an adequate basis as to why changes that credited the isolation condenser for decay heat removal in lieu of the automatic depressurization system and low pressure coolant injection (LPCI)/containment cooling service water and credited the control rod drive system for control of reactor coolant inventory in lieu of LPCI during a postulated high pressure coolant injection (HPCI) room high energy line break (HELB) did not require a license amendment. The licensee entered this issue into its corrective action program.

Because the issue potentially impacted 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 activity implemented per 10 CFR 50.59 safety evaluation 2005-02-001, which adversely affected systems important to safety, would not have ultimately required NRC approval. The inspectors completed a significance determination of the underlying technical issue using NRC's Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and answered "no" to all of the questions under the Mitigating Systems cornerstone. Based upon this Phase 1 screening, specifically this issue did not represent a loss of function, did not result in exceeding a Technical Specification (TS) allowed outage time, and did not affect external event mitigation, the inspectors concluded that the issue was of very low safety significance (Green). The inspectors determined there was not a cross-cutting aspect to this finding. In accordance with the Enforcement Policy, the violation was therefore classified as a Severity Level IV violation.

Inspection Report# : [2007003](#) (*pdf*)



Significance: G Jun 12, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Restore Fire Brigade Equipment to a Ready Status in a Timely Manner after the Performance of a Fire Drill

The inspectors identified a Non-Cited Violation (NCV) of the Dresden Nuclear Power Station Renewed Facility Operating License having very low safety significance (Green) for the licensee's failure to restore fire brigade equipment to a ready status in a timely manner after the performance of a fire drill on June 12, 2007. Corrective actions by the licensee included the restoration of the fire brigade equipment to a ready status at 8:22 p.m. on June 13, 2007.

The inspectors determined that this finding was more than minor because the failure to restore the fire brigade equipment to a ready status, if left uncorrected, would become a more significant safety concern. The inspectors completed a Phase 1 significance determination of this issue using IMC 0609, "Significance Determination Process," Appendix A, Attachment 1, dated March 23, 2007. The inspectors determined that the finding affected the Mitigating

Systems cornerstone and the fire protection defense-in-depth strategies. However, as discussed by IMC 0609, Appendix A, Attachment 1, issues related to performance of the fire brigade are not included in IMC 0609, Appendix F, "Fire Protection Significance Determination Process," 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 the condition existed for slightly more than 24 hours, the delay in getting additional self-contained breathing apparatus would be a maximum of about 10 minutes, and the majority of the safety significant equipment in the turbine building is protected by an automatic fire suppression system. The primary cause of this finding was related to the cross-cutting issue of human performance (work practices) because the licensee failed to ensure adequate supervisory and management oversight of work activities (restoration of the fire brigade equipment), such that nuclear safety was supported (H.4(c)).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  May 18, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Acceptance Criteria in 125 VDC Station Battery Service Test Procedures

The inspectors identified a finding having very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control." Specifically, the licensee failed to incorporate the 125 VDC system minimum required voltage value as the acceptance criteria for the minimum battery terminal voltage inservice test procedure DES-8300-28 "Unit 2 - 125 Volt Main Station Battery Service Test." Following discovery, the licensee entered the issue into its corrective action program to revise the station batteries test procedures to include the minimum required voltage values.

This finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because, if the finding was left uncorrected it would become a more significant safety concern. Specifically, the failure to ensure that the battery terminal voltage during the battery discharge per the service test did not drop below the 125 system design input value could have affected the operability of safety-related equipment in the event of a design basis accident condition. The issue 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."

Inspection Report# : [2007006](#) (*pdf*)

Significance:  May 18, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Adequate Control Voltage for 4160 Breaker's Closing Coil was not Assured

The inspectors identified a finding having very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to assure and verify that the minimum available control voltage at the 4160 circuit breakers was adequate for the closing coils to close the breakers, following a design basis accident and loss of offsite power condition. Following identification of this issue, the licensee obtained a letter from the vendor (General Electric Nuclear Energy) suggesting that it was reasonable to conclude that the closing coils will operate at Dresden's minimum available voltage (58 volt) level based on ageing testing conducted in 1999 and 2007 testing of one of Dresden's breakers.

This finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because the finding was associated with the Mitigated Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events. Specifically, the failure to assure adequate control voltage was available to close the 4160 breakers would have affected the capability of emergency diesel generators and other safety-related equipment to respond to initiating events. The issue 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"

Inspection Report# : [2007006](#) (*pdf*)

Significance:  May 18, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Procedurally Control Regulatory Guide 1.97 Control Board Labeling

The inspectors identified a performance deficiency involving a Non-Cited Violation of Technical Specification (TS) 5.4.1 for the licensee's failure to provide procedural controls for the unique identification of Regulatory Guide (RG) 1.97 post-accident instrumentation to aid the control room operator. Specifically, the licensee failed to adequately control the labeling on both unit's control panels and the simulator, resulting in several improperly marked post-accident indicators.

The finding was greater than minor because, if left uncorrected, it could become a more significant safety concern. Inaccurately labeled control room indicators of RG 1.97 post-accident instrumentation could lead to confusion and hamper the response of operators if conflicting indications resulted due to accident conditions. The issue 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."

Inspection Report# : [2007006](#) (*pdf*)

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform 50.59 Evaluation of Non-Code Conforming Buried HPCI Piping (Section 1R02)

The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59(d)(1) for the licensee's failure to document an evaluation which provides the basis for the determination that a change, test, or experiment did not require a license amendment. Specifically, the licensee's 10 CFR 50.59 screening failed to provide an evaluation as to why the installation of the high pressure coolant injection (HPCI) suction piping, which did not meet USAS B31.1 Code requirements, did not present more than a minimal increase in the likelihood of occurrence of a malfunction of a Structure, System, or Component (SSC) important to safety. The licensee entered this issue into the corrective action program and planned to do additional weld metal tensile and bend tests on a remnant piece of the non-conforming HPCI pipe. The licensee intended to perform this testing to demonstrate quality levels equivalent to that prescribed by the USAS B31.1 Code.

Because the issue potentially impacted 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 this change, which adversely affected equipment important to safety, would not have ultimately required NRC approval. The licensee considered the nonconforming replacement pipe operable, based upon satisfactory hydrostatic tests of the installed pipe to demonstrate structural and leakage integrity at the time of installation. The inspectors completed a significance determination of the underlying technical issue using NRC's inspection manual chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," dated November 22, 2005, and answered "no" to the Mitigating Systems screening questions in the Phase 1 Screening Worksheet. Based upon this Phase 1 screening, the inspectors concluded that the issue was of very low safety significance (Green). In accordance with the Enforcement Policy, the violation was therefore classified as a Severity Level IV Violation.

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Comply with TS 5.5.13 for 125 Vdc Battery Terminal Connection Corrosion and Resistance Measurements

On October 16, 2006, a performance deficiency involving a non-cited violation of TS Section 5.5.13 having very low safety significance was identified by the inspectors for failure to comply with the TS requirement when visible corrosion on the Unit 2 125 Vdc safety-related battery inter-cell and terminal connections was identified. Specifically, the licensee failed to identify, document or take battery connections resistance measurements on battery cell terminations containing visible corrosion. Upon discovery, the licensee's corrective actions included: cleaning identified corroded inter-cells, reinforcing the expectation that sufficient documentation of corrective actions was to be documented, and taking and recording connection resistance measurements.

The finding was considered more than minor because the failure to ensure that the Unit 2 125 Vdc safety-related battery was being maintained in accordance with applicable procedures to comply with the TS requirements, could

result in unacceptable battery terminal connection resistance and decreased battery capacity, rendering the DC system incapable of performing its intended safety function. The finding was determined to be of very low safety significance using the SDP Phase 1 screening worksheet. This finding has a cross-cutting aspect in the area of human performance (work practices) because the licensee did not effectively communicate expectations regarding procedural compliance and personnel did not follow procedures.

Inspection Report# : [2006011](#) (*pdf*)

Significance:  Oct 06, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

EQ Binder Failed to Include Conductor Temperature Rise

The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" having very low safety significance (Green) for the licensee's failure to evaluate and include the conductor temperature rise for the 5KV cables for the CS and LPCI pump motors in the Equipment Qualification Binder EQ-04D. The EQ Binder used the cable design limit of 194 degrees F in calculating the qualified life of the 5KV cables instead of the sum of the conductor temperature rise and the ambient temperature, during and post accident, which together exceeded the cable design limit.

Inspection Report# : [2006012](#) (*pdf*)

Barrier Integrity

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Valves Not Protected in the Division I Torus Pathway as Required by Procedure WC-AA-101

The inspectors identified a non-cited violation of 10 CFR 50.65 (a) (4), having very low safety significance associated with inadequate management of risk. On January 16, 2007, the licensee performed preventive maintenance which rendered Division II of the Unit 2 low pressure coolant injection and torus cooling systems inoperable and unavailable. The licensee's Paragon model for on-line risk required the protection of the Division I torus cooling valves. The licensee protected valves 2-1501-20A and the 2-1501-38A (torus cooling/test valves), but did not protect valve 2-1501-21A which was in series and upstream of the valves that were protected. The licensee reviewed the issue and agreed with the inspector's observation that the valve should have been protected. The licensee determined that the operators were insufficiently trained to ensure the Paragon Model requirements were properly implemented and planned additional training on protecting equipment based on Paragon Model output as corrective action.

This finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on November 2, 2006. Section 3, question 5(I) asks, "Licensee failed to implement any prescribed significant compensatory measures or failed to effectively manage those measures?" The licensee's Paragon model for on-line risk required the protection of the Division I torus cooling valves because the removal of equipment from service in this pathway would result in an elevated risk condition. The licensee did not protect all the valves in the Division I torus cooling valve pathway. This deficiency in the protected pathway program could affect the availability and capability of components and systems that respond to initiating events. The inspectors determined that this finding impacted the Barrier Integrity cornerstone and concluded that the issue had very low safety significance (Green) because no actual barrier failure occurred. The inspectors also concluded that this finding affected the cross-cutting area of human performance (Work Control) because the licensee did not appropriately plan the work activities to include the correct compensatory actions for the existing conditions (IMC 0305 aspect H.3.(a)).

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Licensee's Failure to Develop a Pre-fire Plan for Fire Zone 8.2.6.A, Elevation 534'

A performance deficiency involving a non-cited violation of the Dresden Nuclear Power Station Renewed Facility Operating License was identified by the inspectors due to the licensee's failure to develop a pre-fire plan. Specifically, on November 17, 2006, the inspectors identified that the licensee failed to develop a pre-fire plan for Fire Zone 8.2.6.A, elevation 534'. The licensee has since developed a pre-fire plan for the Fire Zone 8.2.6.A, Elevation 534'.

This finding was considered more than minor because it involved the Barrier Integrity attribute of procedural quality for the control room ventilation system because the failure to develop a pre-fire plan for Fire Zone 8.2.6.A could have adversely impacted the fire brigade's ability to fight a fire. The finding was related to the performance of the fire brigade and was not suitable for SDP evaluation. Therefore, the finding was reviewed by NRC management and determined to be of very low safety significance because no safe shutdown equipment was located in this fire zone. Inspection Report# : [2006011](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Last modified : December 07, 2007