

Dresden 2

2Q/2015 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2015

Identified By: Self-Revealing

Item Type: FIN Finding

Reactor Scram Due to Feedwater Level Control System Failure with a Reactor Recirculation Pump Runback

A finding of very-low safety significance (Green) was self-revealed on January 13, 2015, and again on February 6, 2015, when a loss of power to the Unit 2 feedwater level control (FWLC) system resulted in a reactor scram. The loss in power to the Unit 2 FWLC system was determined to be the result of a human performance error during the original installation of the system under Work Order (WO) 97102835, in that two spade-lug connections associated with the system's +5 Vdc power supply were not properly landed resulting in the intermittent losses in power, and reset of the FWLC system. In addition, a dual in-line package switch on a FWLC Input/Output card was improperly positioned which led to an improper anti-cavitation reactor recirculation pump runback during both events.

The inspectors determined that the failure to properly land the leads associated with the Unit 2 FWLC system +5 Vdc power supply in accordance with the work instructions in WO 97102835 was a performance deficiency that was determined to be more than minor, and thus a finding, because it was associated with the configuration control attribute of the Initiating Events cornerstone, and affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was determined to be of very-low safety significance (Green), because the inspectors answered "No" to the screening question, "Did the finding cause a reactor trip AND the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition (e.g., loss off condenser, loss of feedwater)?" This finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because the licensee did not thoroughly evaluate repetitive alarms and a failure of the FWLC system to ensure that resolutions addressed causes and extent of condition prior to restart following the January 13, 2015, FWLC failure and reactor scram. Specifically, licensee analysis of alarms received prior to the January 13, 2015, scram and troubleshooting of the FLWC system failure on January 13, 2015, was overly focused on multi-functional processor cards which happened to be approaching their

end of expected life. Activities to investigate loose wiring connections following the January 13, 2015, scram failed to identify the incorrectly landed spade-lug connections for the +5 Vdc power supply. [P.2]

Inspection Report# : [2015002](#) (*pdf*)

Mitigating Systems

Significance: G Jun 30, 2015

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Meet Technical Specification Surveillance Requirements Due to Foreign Material Left in the Unit 2 EDG Starting Circuit (1R13)

A finding of very-low safety significance (Green) was self-revealed on April 21, 2015 while performing TS Surveillance DOS 6600-12, “Diesel Generator Tests: Endurance and Margin/Full Load Rejection/ECCS [Emergency Core Cooling System]/Hot Restart,” in support of Surveillance Requirement 3.8.1.16 which requires the EDG to achieve rated frequency and voltage conditions within 13 seconds when started less than or equal to five minutes from a previously loaded run, the Unit 2 Emergency Diesel Generator (EDG) failed to complete a hot restart. Licensee troubleshooting identified a degraded pressure switch associated with main bearing lube oil pressure in the start circuit which was taking several minutes to return to a low-pressure condition upon shutting down the EDG. This resulted in a failure of the start circuit relay to be energized upon initiating a start of the EDG, until the pressure switch returned to its appropriate low-pressure state. An internal investigation of the pressure switch identified strips of Teflon tape in the bellows of the pressure switch, which resulted in the pressure switch’s sluggish response to lowering lube oil pressure, and a failure to meet the TS hot restart criteria.

The inspectors determined that the failure to implement Procedure MA-AA-716-008, “Foreign Material Exclusion Program,” and therefore the inability to perform TS Surveillance Requirement 3.8.1.16 was a performance deficiency, and was considered more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone, and impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors utilized Attachment 0609.04, “Initial Characterization of Findings,” and determined that this issue was of very-low safety significance because each question provided in Inspection Manual Chapter (IMC) 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” was answered “No.” The inspectors concluded that this finding was cross-cutting in the Human Performance, Documentation area, because licensee procedure MA-AA-716-008, “Foreign Material Exclusion Program,” work instructions associated with Work Order 01410972-01, and previous calibrations of pressure switch 2-6641-526 did not include specific instructions and warnings regarding the proper use of Teflon tape with regards to preventing it from becoming foreign material. Other Dresden maintenance procedures, specifically

MA-DR-0300-001, “Preventive Maintenance of Hydraulic Control Unit,” and DEP 0300-16, “Rebuilding the Unit 2 (3) ASCO Scram Solenoid Pilot Valves,” have specific warnings regarding the proper use and potential for Teflon tape to become foreign material. [H.7]

Inspection Report# : [2015002](#) (pdf)

Significance: G Jun 30, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Inadvertent Manipulation of a Test Switch at ESF Bus 23-1 During Surveillance Testing Results in the Inoperability of the 2/3 EDG to Unit 2

A finding of very low safety significance (Green), and an associated NCV of TS 5.4.1, “Procedures,” was self-revealed on May 19, 2015, when the 2/3 EDG was made inoperable to Unit 2 due to the incorrect manipulation of a test switch by operations personnel during a TS required surveillance test. Specifically, while the licensee performed procedure DIS 1500-05, “Division I and II Low-Pressure Coolant Injection ECCS Initiation Circuitry Logic System Functional Test,” Step 106 of Checklist B, operations personnel incorrectly opened test switch TS-159SD2/3 at motor control center 23-1 removing the under-voltage trip associated with the feed breaker for the Division I safety-related 4.16 kV engineered safeguards bus, causing the 2/3 EDG to be inoperable to Unit 2.

The licensee’s failure to properly implement steps in the procedure was a performance deficiency that was determined to be more than minor, and thus a finding, because it was associated with the Mitigating Systems Cornerstone

Attribute of Configuration Control, and adversely affected the 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 (Green), because each of the questions provided in IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” were answered “No.” The finding has a cross-cutting aspect in the area of Human Performance, Field Presence, for failing to ensure senior managers applied the appropriate oversight of infrequently performed and first time work activities. Specifically, the licensee field supervisor or another senior operations manager was not present for the switching activities, which led to the configuration control error. In this instance, the surveillance test is infrequently performed (every 24 months), and the activity, which included using a maintenance procedure vice an operating procedure, was a first time evolution for both equipment operators involved. [H.2]

Inspection Report# : [2015002](#) (pdf)

Significance: **W** Jun 30, 2015

Identified By: NRC

Item Type: VIO Violation

Failure to Ensure Continued Operability of Unit 2 Electromatic Relief Valve 2-0203-3C (2C) Following Implementation of Extended Power Uprate Plant Conditions

A finding of low- to-moderate safety significance, and an associated Apparent Violation of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, “Design Control”;

TS 3.4.3, “Safety and Relief Valves”; and TS 3.5.1, “ECCS Operating”, was self-revealed on February 7, 2015, following the discovery that one of the Unit 2 electromatic relief valves (ERVs) would not have performed its intended safety function. Vibration

induced wear experienced while operating at extended power uprate (EPU) power levels resulted in the degradation of multiple ERV actuator subcomponents, which rendered the valve inoperable. This finding does not represent an immediate safety concern in that the licensee has replaced all Unit 2 and 3 ERV actuators with a hardened design successfully utilized at the Quad Cities Nuclear Power Station, which has also experienced significant steam line vibrations post EPU.

The inspectors determined that the licensee’s apparent failure to ensure measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of SSCs, in particular ERV 2-0203-3C (2C), was a performance deficiency warranting a significance evaluation. The finding was determined to be more than minor in accordance with IMC 0612, “Power Reactor Inspection Reports,” Appendix B, “Issue Screening,” dated September 7, 2012, because it was associated with the Mitigating Systems Cornerstone attributes of design control and equipment performance, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. A Significance and Enforcement Review Panel, using IMC 0609, Appendix A, “Significance Determination Process for Findings At-Power,” dated June 19, 2012, preliminarily determined the finding to be of low to moderate safety significance. The inspectors determined that this finding has a cross-cutting aspect of Resolution in the area of Problem Identification and Resolution, since it involves the failure to implement effective corrective actions to address issues in a timely manner commensurate with their safety significance. This cross-cutting issue is conditional depending on the outcome of the preliminary White finding. [P.3]

Inspection Report# : [2015002](#) (pdf)

Inspection Report# : [2015010](#) (pdf)

Significance: **G** May 29, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Procedure Revisions Resulted in Isolation Condenser Unable to Meet Design Basis

The inspectors identified a finding of very-low safety significance, and an associated Non-Cited Violation (NCV) of Title 10, Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that applicable regulatory requirements and the isolation condenser's (IC's) design bases were correctly translated into procedures. Specifically, the licensee added steps to the IC control procedures which directed operators to secure the IC in order to prevent the water level in the shell from going below 3.5 feet. The added steps would result in the IC being shutdown when required to operate per the IC's design bases. The licensee entered the issue into their Corrective Action Program (CAP) as Action Request 02506445, "NRC MOD/5059 Inspection: ISCO [Isolation Condenser] Operating Procedures," dated May 28, 2015.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Procedure Quality, and affected the cornerstone's objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the inadequate procedures would drive the operators to stop the IC during a design bases event and prevent the IC from performing its design function of removing decay heat from the reactor. The finding has a cross-cutting aspect in the area of Human Performance; Teamwork, because the licensee did not communicate and coordinate activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, the Operations Department failed to communicate and coordinate with the Engineering Department when developing the procedural changes. [H.4]

Inspection Report# : [2015007](#) (pdf)

Significance:  May 29, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

EDG Usable Fuel Calculations Failed to Consider Appropriate EDG Frequency Variations

The inspectors identified a finding of very-low safety significance, and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to account for increased fuel oil consumption during the development of the Emergency Diesel Generator (EDG) Calculation 10553 CALC 07, "Dresden Station Emergency Diesel Generators Endurance Calculations," Revision 2, which resulted in non-conservative Technical Specifications (TS). Specifically, the licensee failed to account for the increased fuel oil consumption at an EDG frequency of 61.2 Hertz (Hz), and ensure that the minimum fuel oil level in the EDG day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour. The licensee entered the issue into their CAP as Action Request 02506869, "NRC MOD/5059 Inspection: Emergency Diesel Generator Fuel Consumption," dated May 28, 2015.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone's objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to account for the increased fuel oil consumption resulting from operation at a higher EDG frequency. Therefore, the licensee did not ensure that the minimum fuel oil level in the day tanks, as required per TS 3.8.1.4, was adequate to support the EDGs' mission time at 110 percent for one hour. This finding has a cross cutting aspect in the area of Problem Identification and Resolution; Identification, because the licensee did not thoroughly evaluate the EDG fuel oil consumption when considering EDG frequency variation. Specifically, the licensee failed to translate applicable design bases into specifications which resulted in non-conservative TS. [P.1]

Inspection Report# : [2015007](#) (pdf)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Perform 10 CFR 50.59 Evaluation for Procedure DOP 1300-02

The inspectors identified a NCV of 10 CFR 50.59, “Changes, Tests and Experiments,” when, on February 10, 2011, the licensee failed to complete a 10 CFR 50.59 evaluation when they revised procedure DOP 1300–02 to change the position of Motor Operated Valve (MOV) 2–1301–3, Reactor Inlet Isolation, such that the Isolation Condenser (IC) system would not meet its design requirement of removing 84.2E+06 BTUs in 20 minutes when initiated from its minimum Technical Specification (TS) level and maximum TS temperature.

The inspectors determined that the licensee’s failure to identify that the valve position adjustment required a 10 CFR 50.59 evaluation was a performance deficiency. This finding was evaluated using traditional enforcement because it had the potential for impacting the NRC’s ability to perform its regulatory function. This finding was more than minor because there was a reasonable likelihood that the change would have required NRC review and approval prior to implementation. Specifically, by establishing a new position setting of MOV 2–1301–3, the licensee failed to determine that the proposed change would cause isolation condenser tubes to become exposed in the design basis accident such that it adversely affected a Final Safety Analysis Report described design function, which required an evaluation to be performed. In accordance with IMC 0612, Appendix B, “Issue Screening,” traditional enforcement does apply as the violation impacted the regulatory process. Using IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” dated June 19, 2012, Exhibit 2, “Mitigating Systems Screening Questions,” the issue screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of the system and/or function, did not represent an actual loss of function of at least a single train for greater than its TS allowed outage time, and did not result in the actual loss of one or more trains of non-technical specification equipment. Inspectors assessed the violation in accordance with the Enforcement Policy, and determined it to be a Severity Level IV violation because it resulted in a condition evaluated by the SDP as having very low safety significance (Enforcement Policy example 6.1.d.2). This finding has a cross-cutting aspect of Design Margins

[IMC 0310, H.6] in the area of human performance, for failing to carefully guard and maintain the IC design requirement of removing 84.2E+06 BTU in 20 minutes.

Inspection Report# : [2014004](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Evacuation Time Estimate Submittals

The NRC identified a NCV of 10 CFR 50.54(q)(2) associated with 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Dresden Nuclear Power Station Emergency Plan as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations (OROs) by the required date.

Exelon submitted the Dresden Nuclear Power Station ETE to the NRC on

December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETEs to responsible OROs and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was

under Exelon's control to identify and prevent. The finding is more than minor because it is associated with the emergency preparedness cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their corrective action program (CAP) and re-submitted a new revision of the Dresden Nuclear Power Station ETE to the NRC on May 2, 2014, which was found to be complete by the NRC. The cause of the finding is related to the cross-cutting element of Human Performance, Documentation. [IMC 0310, H.7]

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Significance:  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

10 CFR 20.1701; Failure to Implement Effective Radiological Engineering Controls

A finding of very-low safety significance, and an associated NCV of 10 CFR 20.1701 was self-revealed during work activities associated with the failure to effectively implement planned radiological engineering controls during reactor head reassembly that resulted in personal contaminations and unintended radiological intakes to workers. On November 14, 2014, during the cleaning of the reactor head studs, several workers on the refuel floor were contaminated, and received unplanned and unintended intakes of radioactive material. Corrective actions included revising applicable procedures to improve the engineering and contamination controls during reactor head reassembly.

The inspectors determined that that the finding was more than minor in accordance with IMC 0612, in that the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone, and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, the failure to implement effective radiological engineering and contamination controls during the cleaning of the contaminated reactor head studs resulted in personal contaminations and intakes to several workers. The inspectors concluded that the radiological hazards had the potential to result in higher exposures to the individuals had the circumstances been slightly altered. The finding was determined to be of very-low safety significance in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," because it was not an as low as reasonably-achievable planning issue, there was neither overexposure nor substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The inspectors concluded that the cause of the issue involved a cross-cutting component in the human performance in that the licensee's management did not ensure that effective radiological engineering controls was either managed or coordinated commensurate to the work activities. [H.5]

Inspection Report# : [2015001](#) (*pdf*)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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