

Prairie Island 1 4Q/2013 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH APPROPRIATE DESIGN CONTROL MEASURES FOR SELECTION OF REPLACEMENT PARTS.

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," on October 8, 2013, due to the failure to establish measures for the selection of parts that are essential to the safety-related functions of structures, systems, or components (SSCs). Specifically, the licensee failed to properly evaluate the specifications and quality of replacement parts such as gaskets, o-rings, packing materials, and diaphragms to ensure that these parts were suitable for installation in safety-related systems. As a result, multiple systems were required to be declared operable but non-conforming. Corrective actions for this issue included ensuring personnel understood the requirements regarding parts selection,

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determining the correct parts to be used and initiating work orders to ensure that parts were replaced in the future if required.

The inspectors determined that this issue was more than minor because if left uncorrected, the installation of parts/materials which failed to meet requirements could lead to subsequent part failure. This failure would adversely impact the ability of safety-related equipment to perform its safety function. The inspectors determined that this issue was of very low safety significance because Question 1 in IMC 0609, Attachment 0609.04, Attachment A, Exhibit 2, was answered "yes." The inspectors concluded that this issue was cross-cutting in the Human Performance, Resources area because the licensee's parts specification and quality level documentation was not complete, accurate and/or up to date (H.2(c)).

Inspection Report# : [2013005](#) (pdf)

Significance: G Dec 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT CONDITION ADVERSE TO QUALITY ON D1 EDG.

A self-revealing finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified on October 15, 2013, due to the failure to correct a condition adverse to quality. Specifically, the licensee failed to correct a D1 emergency diesel generator (EDG) lube oil cooler leak prior to the EDG being rendered inoperable. Corrective actions for this issue included reviewing the engineering department's equipment monitoring program, ensuring the lube oil cooler end bell was adequately torqued and repairing the lube oil cooler.

The inspectors determined that this issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the

availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The failure to correct the lube oil cooler leak resulted in the licensee accruing unplanned unavailability on the D1 EDG during this emergent repair. The inspectors determined that this issue was of very low safety significance because each of the questions provided in IMC 0609, Attachment 0609.04, Appendix A, Exhibit 2, were answered “no.” The inspectors concluded that this issue was cross-cutting in the Problem Identification and Resolution, Corrective Action Program (CAP) area because the licensee failed to thoroughly evaluate the condition of the leaking lube oil cooler to ensure that repairs were properly prioritized (P.1(c)).

Inspection Report# : [2013005](#) (*pdf*)

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

IMPROPER WORK INSTRUCTIONS RENDERED 2R-49 INOPERABLE.

A self-revealing finding of very low safety significance (Green) and an non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” was identified on July 2, 2013, for the failure to have documented instructions, procedures, or drawings, of a type appropriate to the circumstances while performing maintenance. Specifically, maintenance personnel rendered Unit 2 Containment High Range Area Monitor 2R-49 inoperable after lifting a wire as part of a Unit 1 Containment High Range Area Monitor 1R-49 power supply replacement. Corrective actions for this issue included returning 1R-49 and 2R-49 to service and providing additional supervisory involvement to ensure all maintenance personnel were aware of expectations for ensuring that energized leads were appropriately identified, that adequate barriers were established to prevent inadvertent contact with energized leads, and ensuring that access to leads to be lifted were adequate for safe manipulation.

The inspectors determined that this issue was more than minor because it was associated with the configuration control and procedure quality attributes of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). This issue was of very low safety significance because each of the questions provided in IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” were answered “no.” This issue was cross cutting in the Human Performance, Work Control area because the licensee failed to appropriately plan work activities by incorporating job site conditions which may impact human performance or plant structures, systems, and components (H.3(a)).

Inspection Report# : [2013004](#) (*pdf*)

Significance:  Sep 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

IMPROPER WORK INSTRUCTIONS RENDERED REACTOR PROTECTION INSTRUMENT AC INVERTER 13 INOPERABLE.

A self-revealing finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” was identified on July 24, 2013, for the failure to have documented instructions, procedures, or drawings, of a type appropriate to the circumstances when performing maintenance on the 2R-49 Unit 2 Containment High Range Area Monitor power supply. Specifically, the #13 reactor protection instrument inverter was rendered inoperable when two terminals were shorted during the power supply replacement. Corrective actions for this issue included returning the #13 instrument inverter to an operable status and providing additional supervisory involvement to ensure all maintenance personnel were made aware of expectations for ensuring that energized leads were appropriately identified, that adequate barriers were established to prevent inadvertent contact with energized leads, and ensuring that access to leads to be lifted were adequate for safe manipulation.

This issue was more than minor because it was associated with the design control, configuration control and procedure

quality attributes of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined that this issue was of very low safety significance because each question provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," was answered "no." This issue was cross cutting in the Human Performance, Work Control area because the licensee failed to appropriately plan work activities by incorporating job site conditions which may impact human performance; plant structures, systems, and components; human system interface; or include the need for planned compensatory actions (H.3(a)).

Inspection Report# : [2013004](#) (pdf)

Significance:  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

INAPPROPRIATE REMOVAL OF DIESEL LUBE OIL VALVE MOUNTING CAUSES VIBRATION AND FRETTING.

An inspector identified finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified on August 26, 2013, due to the licensee's failure to follow Procedure FP E EQV 01, "Equivalency Evaluations and Changes." Specifically, the licensee failed to evaluate the operational vibration and establish that the removal of a valve mounting as part of Engineering Change 17270 did not adversely change the design function of the D2 EDG lube oil pressure boundary. The licensee's planned long-term corrective actions included replacing the copper tubing lines and restoring the mounting of the valves.

The finding was determined to be more than minor because if left uncorrected, the issue had the potential to lead to a more significant safety concern. Specifically, continued vibrational contact between the oil filter housing and the brass fitting had the potential cause failure of the brass fitting or copper tubing and a loss of the lube oil pressure boundary. The inspectors determined the finding was of very low safety significance because question #1 provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Screening Questions," was answered "yes." This finding was cross-cutting in the Human Performance, Work Practices area because the licensee did not ensure supervisory and management oversight of work activities such that nuclear safety is supported (H.4(c))

Inspection Report# : [2013004](#) (pdf)

Significance:  Jun 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

IMPROPER WORK INSTRUCTIONS RENDERED D1 EDG INOPERABLE.

A self-revealing finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings" was identified on June 13, 2013, due to the failure to have drawings appropriate to the circumstances when performing maintenance on the D1 Diesel Generator Room Cooling Supply and Exhaust Fan Blade Pitch Controller. Specifically, Logic Diagram NF 40326 1, "Interlock Logic Diagram Diesel Generator Room Cooling Unit 1 and 2," incorrectly indicated that the fan blade pitch position would change to the maximum flow position if the controller experienced a loss of signal condition. This incorrect information resulted in the D1 Diesel Generator being rendered inoperable for 30 minutes when the temperature transmitter was disconnected from the controller as part of the maintenance activity. The licensee subsequently restored the D1 diesel generator to service by reconnecting the transmitter to the controller.

The inspectors determined that this issue was more than minor because it was associated with the design control, configuration control and procedure quality attributes of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating

events to prevent undesirable consequences. This issue was of very low safety significance because each question provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," was answered "no." The inspectors concluded that this issue was cross cutting in the Problem Identification and Resolution, Operating Experience (OE) area because the licensee did not implement and institutionalize OE through changes to station processes, procedures, equipment, and training programs after experiencing a similar issue in 2012 (P.2(b)).

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: VIO Violation

FAILURE TO MONITOR SSCs AS REQUIRED BY 10 CFR 50.65.

The inspectors identified a finding of very low safety significance (Green) and a violation of 10 CFR 50.65, due to the failure to demonstrate that the performance or condition of multiple SSCs was being effectively controlled through the performance of appropriate preventive maintenance. The licensee also failed to establish goals sufficient to provide reasonable assurance that two SSCs were capable of performing their intended safety function after their performance demonstrations became invalid. Specifically, more than 350 evaluations written between January 2012 and April 2013

to demonstrate whether the performance or condition of specific SSCs was being effectively controlled remained unapproved as of May 2013. In addition, the performance demonstration for one SSC was allowed to remain invalid for approximately one year before designating the SSC as an (a)(1) system. Corrective actions for this issue included approving the previous evaluations, establishing 50.65(a)(1) action plans when required, and establishing actions to improve the maintenance rule program.

This issue was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors utilized IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and concluded that this finding's significance was best characterized by using IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria." Based upon the fact that none of the equipment issues discussed above rose to a level of greater than very low safety significance, the inspectors determined that this issue was best characterized as having very low safety significance (Green). The inspectors concluded that this finding was cross cutting in the Problem Identification and Resolution, Corrective Action Program area because the licensee failed to take appropriate and timely corrective actions to address the issues identified in November 2011 (P.1(d)).

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Apr 19, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Verify the Adequacy of Cooling Water System Design.

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to correctly model the effects of the strainers and isolation valves in the cooling water flow calculations. Specifically, calculations did not account for the strainer backwash differential pressure setpoint and leakage of the ring header isolation valves. This finding was entered into the licensee's Corrective Action Program (CAP) to revise the affected calculations and evaluate the need for additional corrective actions.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating

Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of the cooling water system to respond to initiating events to prevent undesirable consequences. Specifically, the magnitude of the errors required the licensee to re perform the cooling water flow calculations to assure the system would be able to meet the flow demand. The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee removed conservatism from the calculations, added the maximum allowable strainer loss, and reasonably determined that the system remained operable. In addition, the licensee determined the isolation valves had not experienced gross leakage. The inspectors did not identify a cross-cutting aspect associated with this finding because it did not reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2013007](#) (pdf)

Significance: G Apr 19, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Review the Suitability of the CL Strainers Under Post seismic Flow Conditions.

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to review the suitability of the cooling water strainers under post seismic flow conditions. Specifically, the licensee did not recognize the post-seismic hydraulic parameters were greater than the vendor design values for the strainers. This finding was entered into the licensee's CAP to evaluate the condition and initiate further actions as necessary.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of the cooling water system to respond to initiating events to prevent undesirable consequences. Specifically, flow rates higher than design values may impair the cleaning function and cause damage to the strainers affecting the capability of the cooling water system to perform its accident mitigating function. The finding screened as of very low safety significance (Green) because a detailed risk evaluation determined the core damage frequency of this finding was $1.9E^{-7}/yr$. The inspectors did not identify a cross-cutting aspect associated with this finding because it did not reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2013007](#) (pdf)

Significance: G Apr 19, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Demonstrate the Ability to Transfer Diesel Fuel Oil Between Unit 1 Fuel Oil Tanks.

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the failure to demonstrate the ability to transfer diesel fuel oil from any Unit 1 fuel oil storage tank to any Unit 1 emergency diesel generator or diesel driven cooling water pump day tank. Specifically, the licensee did not intentionally or periodically verify the ability to transfer fuel between the Unit 1 tanks as credited in the Technical Specification Basis and Updated Safety Analysis Report. This finding was entered into the licensee's CAP to test the affected flow paths.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of the Unit 1 emergency diesel generators and diesel driven cooling water pumps to respond to initiating events to prevent undesirable consequences. Specifically, the failure to verify the fuel oil transfer capability did not ensure the minimum fuel oil volume required by Technical Specifications could be supplied

to these systems to support their accident mitigating function. The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee reviewed the recent history of the affected piping system and determined the affected flow paths were successfully used in 2010 and 2011 providing reasonable assurance the flow paths were available. The inspectors did not find an applicable cross-cutting aspect, which represented the underlying cause of this performance deficiency; therefore, no cross-cutting aspect was assigned.

Inspection Report# : [2013007](#) (*pdf*)

Significance: G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CORRECT CONDITION ADVERSE TO QUALITY FOR VALVE SI-6-4.

The inspectors identified a finding of very low safety significance and a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," on December 29, 2012, due to the failure to correct a condition adverse to quality. Specifically, the licensee failed to correct safety injection (SI) accumulator check valve SI 6 4 after the valve failed surveillance testing. Corrective actions for this issue included performing an operability evaluation which determined that SI 6 4 was operable but nonconforming, scheduling the testing of SI 6 4 for the next refueling outage, and performing an extent of condition review.

The inspectors determined that that this issue was more than minor because if left uncorrected the failure to correct conditions adverse to quality could become a more significant safety concern due to safety-related equipment issues being unresolved. This issue was of very low safety significance because each question provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," was answered "no." The inspectors concluded that this issue was cross cutting in the Problem Identification and Resolution, Corrective Action Program area because the licensee did not thoroughly evaluate the problems with SI 6 4 to ensure that the resolution addressed the cause P.1(c).

Inspection Report# : [2013002](#) (*pdf*)

Significance: G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE WORK INSTRUCTIONS FOR FOREIGN MATERIAL REMOVAL FROM D2 EDG AIR START PIPING.

The inspectors identified finding of very low safety significance and a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," on January 28, 2013, due to the failure to have instructions appropriate to the circumstance to address the presence of foreign material in the new D2 emergency diesel generator (EDG) air start piping assembly. This resulted in the D2 EDG failing to start during monthly surveillance testing. Corrective actions for this issue included removing the foreign material from the piping assembly and inspecting the remaining

D1 and D2 EDG air start piping assemblies for cleanliness.

The inspectors determined that this issue was more than minor because if left uncorrected, the presence of foreign material in safety-related components could lead to a more significant safety concern. Specifically, foreign material could migrate into various areas and render safety-related equipment inoperable. The inspectors determined that this issue was of very low safety significance because each question provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," was answered "no" due to the ability to start the D2 EDG using the remaining air start "train" and the lack of foreign material in this portion of the D2 EDG starting air system. The inspectors determined that this issue was cross cutting in the Problem Identification and Resolution, Operating Experience area because the licensee had not institutionalized the operating experience regarding solenoid valve sticking due to foreign material through changes to station processes, procedures, equipment and training programs

P.2(b).

Inspection Report# : [2013002](#) (pdf)

Significance: G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CORRECT CONDITION ADVERSE TO QUALITY ON THE D1 EDG.

The inspectors identified a finding of very low safety significance and an non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, on August 14, 2012, due to the licensee's failure to identify and correct a condition adverse to quality. Specifically, the licensee failed to identify and correct a condition of thick smoke resulting from an exhaust manifold oil leak on the D1 EDG; this condition had existed since April 13, 2012. This issue led to an unplanned shutdown of the Unit 1 reactor due to the discovery of a similar condition on the D2 EDG. Corrective actions included completing an equipment cause evaluation and replacing the EDG exhaust manifold gaskets and bolting.

The inspectors determined the finding was more than minor because, if left uncorrected, the failure to promptly identify and correct conditions adverse to quality could become a more significant safety concern. Specifically, the failure to identify and correct emergency diesel generator oil leaks could lead to a fire hazard and the unavailability of safety-related equipment. A Senior Reactor Analyst determined that this finding was of very low safety significance because the overall change in core damage frequency due

to this issue was $3.3E-7$ /yr. The inspectors determined the finding was cross-cutting in the Problem Identification and Resolution, Operating Experience area because of the licensee's failure to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs P.2(b).

Inspection Report# : [2013002](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

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

Last modified : February 24, 2014