

Prairie Island 1

1Q/2011 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM ADEQUATE POST MODIFICATION TESTING FOLLOWING BATTERY CHARGER REPLACEMENT.

In July 2010, the inspectors identified a finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion III, due to the failure to establish measures to assure that the design of the 12 battery charger was verified using a suitable testing program. Specifically, the test program did not ensure that the 12 battery charger would operate as required during a loss of offsite power event coincident with a loss of coolant accident (LOOP/LOCA event). Corrective actions for this issue included establishing a designated operator to ensure that actions could be taken to reset the 12 battery charger if needed following a LOOP/LOCA event. This designated operator will remain in place until the licensee modifies the 12 battery charger during the next Unit 1 refueling outage.

The inspectors determined that this issue was more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone. In addition, this deficiency impacted that cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors completed Phase 1 and Phase 2 SDP evaluations, and determined that a Phase 3 SDP evaluation was required due to this issue being potentially greater than green. The Region III Senior Reactor Analyst (SRA) completed the Phase 3 evaluation and determined that this finding was of very low safety significance due to the low probability of a LOOP/LOCA event and because the licensee had procedural guidance in place to restore the 12 battery charger if required. No cross-cutting aspect was assigned to this finding since the cause of the finding was not reflective of current performance.

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO COMPLETE OPERABILITY DETERMINATIONS IN ACCORDANCE WITH PROCEDURAL REQUIREMENTS.

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion V, in October 2010, due to the failure to complete adequate immediate and prompt operability determination on the D2 emergency diesel generator (EDG) and the 12 battery charger in accordance with Procedure FP OP OL 01, "Operability/Functionality Determination." Corrective actions for this issue included revising the respective operability evaluations to comply with procedural requirements, providing additional training on the operability process to operations and engineering personnel, and implementing a daily management review of operability decisions.

The inspectors determined that the finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone. In addition, this finding impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors completed the Phase 1 and Phase 2 SDP evaluations, and determined that a Phase 3 SDP evaluation was required because the finding was potentially greater than green. The SRA performed a

Phase 3 SDP evaluation and determined that this finding was of very low safety significance due to the low probability of a LOOP/LOCA event and because the licensee had procedural guidance in place to restore the 12 battery charger if required. This finding was determined to be cross-cutting in the Problem Identification and Resolution, Corrective Action Program area because the licensee had not taken appropriate corrective actions to address a previously identified adverse trend regarding the adequacy of operability determinations (P.1(d)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ENSURE COMPLIANCE WITH TS SR 3.8.1.10c.

The inspectors identified a finding of very low safety significance and an NCV of Technical Specification (TS) 3.8.1 in October 2010 due to the failure to demonstrate that the D2 EDG would energize the 12 battery charger within 60 seconds of an actual or simulated LOOP/LOCA event. Specifically, the licensee failed to comply with TS surveillance requirement 3.8.1.10c. Corrective actions for this issue included declaring the D2 EDG inoperable; requesting an exigent TS change from the NRC to address the issues associated with TS Surveillance Requirement 3.8.1.10c; receiving approval of the exigent TS change; and implementing actions to address a long-standing issue with the 12 battery charger.

The inspectors determined that this issue was more than minor because, if left uncorrected, long-standing noncompliance with TS requirements would become a more significant safety concern. The inspectors completed a Phase 1 SDP evaluation and determined that this finding was of very low safety significance because it was not due to an EDG design deficiency; did not result in a loss of safety function for the Unit 1 EDGs; and did not screen as potentially risk significant due to a seismic, flooding or severe weather initiating event. No cross-cutting aspect was assigned to this finding because the decisions which led to the non-compliance were made several years ago and were not reflective of current performance.

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO INCLUDE 121 MOTOR DRIVEN COOLING WATER PUMP (MDCLP) COUPLING HARDNESS INFORMATION IN PROCUREMENT DOCUMENT.

A self-revealed finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion IV, was identified on July 25, 2010, due to the licensee's failure to specify the required 121 motor driven cooling water pump shaft coupling hardness as part of the procurement process. As a result, the pump was rendered unavailable due to a shaft coupling failure due to excessive hardness of the shaft. Corrective actions for this issue included repairing the cooling water pump and revising the procurement documents to include the required coupling hardness.

The inspectors determined that this issue was more than minor because it impacted the design control attribute of the Mitigating Systems Cornerstone. This finding also impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors completed the Phase 1 and Phase 2 SDP evaluations and determined that a Phase 3 evaluation was required due to this issue being potentially greater than green. The Region III SRA determined that this finding was of very low safety significance because it did not represent an increase in the likelihood of a loss of cooling water initiating event due to different couplings being installed on the other cooling water pumps. The inspectors determined that this finding was cross-cutting in the Problem Identification and Resolution, Corrective Action Program area because the licensee did not use operating experience to support plant safety. Specifically, the licensee did not implement changes to the 121 motor driven cooling water pump after receiving and reviewing multiple pieces of operating experience regarding coupling failures due to hardness issues (P.2(b)).

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURE RESULTS IN REMOVING INCORRECT RADIATION MONITOR FROM SERVICE.

A self-revealed finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion V, was identified on November 12, 2010, due to the failure to follow procedure while transferring the power supply for motor control center 1T1 from Unit 1 to Unit 2. The failure to follow procedures resulted in removing safety-related radiation monitor 1R11/1R12 from service and an unplanned entry into TS 3.4.16.B. Corrective actions for this issue included returning radiation monitor 1R11/1R12 to service and re-enforcing the use of human performance tools to operations personnel.

The inspectors determined that this issue was more than minor because, if left uncorrected, the performance of plant activities on the incorrect unit would become a more significant safety concern. The inspectors concluded that this finding was of very low safety significance because the removal of the radiation monitor from service was not a design deficiency; did not result in a loss of system safety function for greater than the TS allowed outage time; and was not potentially risk significance due to seismic, flooding or severe weather initiating events. The inspectors determined that this finding was cross-cutting in the Human Performance, Work Practices area because personnel failed to use human error prevention techniques to ensure that work was performed safely (H.4(a)).

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ENSURE THAT RHR WOULD BE CAPABLE TO RESPOND DURING MODE 4 EVENTS

A finding of very low safety significance and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors on July 12, 2010, due to the failure to establish measures to assure that applicable regulatory requirements and the design basis for the residual heat removal (RHR) system were correctly translated into specifications, drawings, procedures and instructions. Specifically, the licensee failed to have appropriate procedures in place to ensure that the safety function of the RHR system was maintained following valve repositioning to support transitioning from the decay heat removal mode of RHR to providing suction from the refueling water storage tank (RWST) or following a Mode 4 loss of coolant accident.

This performance deficiency was determined to be more than minor because it was associated with the mitigating system cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that this issue was of very low safety significance, because other systems were available for injection into the reactor coolant system and feed the steam generators; and due to the extremely low probability of a large loss of coolant accident during Mode 4 operations. This finding had no cross-cutting aspect since there was no performance characteristic from IMC 0310 that was a significant contributor to the performance deficiency.

Inspection Report# : [2010004](#) (*pdf*)

Significance:  Sep 07, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Design Diesels to Survive Tornado Borne Missiles (Section 40A4.3.01 b)

Green: The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to design the D1/D2 diesel generators to survive impact from the design basis missiles. 10 CFR 50, Appendix B, Criterion III states, in part, that "Measures shall be established to assure that applicable regulatory requirements and the design basis...for those systems, structures, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions." Contrary to this requirement, on July 28, 1994, the licensee approved a calculation that used evaluation methodologies that were not included in the license for the facility. The licensee evaluated the condition and concluded D1/D2 remained operable but non conforming.

The inspectors determined that the failure to design the facility to withstand the impact of the design basis missile was a performance deficiency that warranted a significance evaluation. Using IMC 0612, the inspectors determined the

failure to design the D1/D2 diesel to survive an impact from the design basis missile was more than minor because it is associated with the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The inspectors consulted with the Senior Reactor Analyst (SRA) and determined that the risk associated with the condition was green. No cross cutting aspect was assigned because the performance deficiency from 1994 was not representative of current performance. (Section 3.01 a)
Inspection Report# : [2010009](#) (pdf)

Significance:  Aug 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Fuel Oil Storage Design Did Not Support EDGs 7-Day Supply

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," for the licensee's failure to ensure that the fuel oil storage capability for emergency diesel generators (EDGs) D5 and D6 maintained the minimum volume required to run under accident conditions for seven days as specified in Regulatory Guide 1.137 "Fuel Oil Systems for Standby Diesel Generators." Specifically, with one tank out-of-service, as allowed per procedure, the licensee would not have enough fuel to meet the mission time for one diesel following a single failure of the opposite diesel during an accident conditions. This finding was entered into the licensee's corrective action program and a Temporary Change Request was initiated by the licensee to update the procedure until all issues associated with EDGs fuel oil storage capabilities (i.e., common mode failure, single failure, etc.), are resolved.

The inspectors determined that this finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring availability of the EDG to respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance (Green) because a single storage tank provided sufficient fuel for EDG operation under accident loads for a period greater than the 24-hour probabilistic risk assessment (PRA) mission time. This finding had a cross cutting aspect in the area of Human Performance, Decision Making, because the licensee failed to thoroughly evaluate the impact of downgrading the interconnection between the tanks to non-safety-related and the scenarios and existing practices that it would affect. (IMC 0310, Section 06.01.a.(2) [H.1(b)])

Inspection Report# : [2010006](#) (pdf)

Significance:  Aug 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Errors Found in the Electrical Relay Setting Calculation

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," related to calculational errors found in the licensee's relay setting analysis. Specifically, the protective relay setting calculation for Unit 2 4 KV safeguards switchgear failed to include the over-current relay setting calibration tolerance limits and failed to use the actual field measured value for offsite source transformer neutral grounding resistor in calculating the line to ground fault current. This finding was entered into the licensee's corrective action program and a preliminary verification performed by the licensee concluded that the relay settings were still acceptable.

The inspectors determined that this finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring availability and reliability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance (Green) because the licensee was able to demonstrate that the relay settings were still acceptable. The finding did not have a cross-cutting aspect because it was not reflective of current performance. (Section 1R21.3.b.(5))

Inspection Report# : [2010006](#) (pdf)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE FOREIGN MATERIAL EXCLUSION CONTROLS ASSOCIATED WITH WORK ON EMERGENCY DIESEL GENERATORS

A finding of very low safety significance and a non cited violation of 10 CFR Part 50, Appendix B, Criterion V was identified by the inspectors on March 15, 2010, due to the licensee's failure to have instructions and procedures appropriate to the circumstance for performing Work Order 382152 and Surveillance Procedure 1295, "D1 Diesel Generator 6 Month Fast Start Test." The failure to have instructions and procedures appropriate to the circumstance resulted in rendering the D1 diesel generator inoperable for 28 hours due to the introduction of foreign material into the lube oil sump during oil addition activities. Corrective actions included retrieving the hose and nozzle, replacing the plastic oil cans with new solid metal cans, and revising the pre job brief instructions and "Are You Ready" checklist to include a question whether foreign material will be generated through the use of portable equipment or tools.

The inspectors determined that the finding was more than minor because it was associated with the procedure quality and human performance attributes 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 determined that this finding was of very low safety significance because it did not represent a loss of a system safety function and the diesel generator was inoperable for less than the Technical Specification allowed outage time. This finding was determined to be 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 plant structures, systems, or components (H.3(a)). (Section 40A3.10)

Inspection Report# : [2010003](#) (pdf)

Significance: TBD May 03, 2010

Identified By: NRC

Item Type: AV Apparent Violation

Failure to Ensure Design Measures Were Appropriately Established for the Emergency Diesel Generator, Auxiliary Feedwater, and Safety Related Battery Systems (Section 40A5.1)

An apparent violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors due to the licensee's failure to establish measures to ensure that engineered safety features such as the emergency diesel generators, the auxiliary feedwater system, and the safety related batteries were not adversely affected by events that cause turbine building flooding. As a result, flooding from these events would cause a loss of safety function for these systems. This issue was entered into the licensee's corrective action program (CAP) as CAP 1178236. Upon identifying this issue, the licensee implemented compensatory measures to ensure that the systems listed above were not adversely impacted following a turbine building internal flood.

This finding was determined to be more than minor because it impacted the design control and external events attributes of the Mitigating Systems cornerstone. The finding also impacted the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP evaluation and determined that a Phase 3 evaluation was required because the finding represented a loss of safety function of multiple mitigating systems. A Phase 2 SDP evaluation was not performed because the Phase 2 SDP worksheets do not apply to internal flooding events. The results of the Phase 3 SDP assessment showed that this finding was potentially Greater than Green. No cross cutting aspect was assigned to this finding because licensee decisions made in regard to evaluating the susceptibility of mitigating systems equipment to turbine building internal flooding events were made more than 3 years ago and therefore, not reflective of current plant performance. (Section 40A5.1)

Inspection Report# : [2010010](#) (pdf)

Inspection Report# : [2010011](#) (pdf)

Barrier Integrity

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY ASSESS AND MANAGE RISK DURING PLANNED MAINTENANCE ACTIVITY.

The inspectors identified finding of very low safety significance and an NCV of 10 CFR 50.65 a(4) on August 31, 2010, due to a failure to properly assess and manage the risk associated with performing planned maintenance activities on the 111 switchgear unit cooler and the 121 control room chiller. Specifically, the licensee failed to identify these maintenance activities as high risk and implement additional risk management actions prior to starting the maintenance. As a result, an unexpected low suction pressure condition occurred on the 122 control room chiller pump. Corrective actions included restoring from the maintenance activities.

The inspectors determined the finding was more than minor because if left uncorrected, the failure to properly assess and manage plant risk could result in the need to shut down both reactors (a more significant safety concern) due to a loss of control room cooling function. This finding was determined to be of very low safety significance because it was not specific to the radiological barrier provided by the control room ventilation system; was not a degradation of the barrier function of the control room against smoke or a toxic atmosphere; did not represent an actual open pathway in the reactor containment; and it did not involve an actual reduction in the function of hydrogen igniters. The inspectors concluded that this finding was cross-cutting in the area of Human Performance, Work Control area because the licensee did not plan and coordinate work activities consistent with nuclear safety (H.3(a)).

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Aug 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate the Adequacy of Voltage for Safety-Related Equipment

The inspectors identified a finding having very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to consider design basis accident temperature and voltage variations when performing an operability evaluation of safety-related equipment with very low voltage margin. Specifically, during the 2010 CDBI self-assessment, a licensee's reviewer identified concerns regarding an operability evaluation that failed to consider the design basis accident temperatures and voltage. Although the licensee placed this issue in their corrective action program, the licensee failed to assess operability. After identification by the team, the licensee determined the associated equipment were operable or operable but non-conforming.

The inspectors determined that this finding was more than minor because it was associated with Barrier Integrity cornerstone attribute of design control and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. This finding was of very low safety significance (Green) because the finding was a not degradation of a boundary, was not an open pathway and did not impact the hydrogen igniters. This finding had a cross-cutting aspect in the area of problem identification and resolution in the component of self assessment because the 2010 CDBI self-assessment concerns were not evaluated and corrected. (IMC 0310, Section 06.02c.(3) [P3(c)]) (Section 1R21.3.b.(2))

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Aug 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Analysis Used to Determine PORV/LTOP Setpoint

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," for the licensee's failure to have adequate calculation used to ensure reactor vessel 10 CFR Part 50, Appendix G limits are not exceeded. Specifically, the design calculation performed by Westinghouse to determine the pressurizer power operated relief valve (PORV) lift setting for low temperature overpressure protection (LTOP) analysis failed to include the correct inputs for mass addition transient, and also failed to consider the seismic and environmental terms in the instrument uncertainty calculations. The licensee subsequently entered this finding into their corrective action program and performed an operability evaluation and determined the PORVs remained operable and capable of performing their LTOP functions.

The inspectors determined that this finding was more than minor because it was associated with the Barrier Integrity cornerstone attribute of design control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. This finding was of very low safety significance (Green) because it did not result in non-compliance with LTOP TS and the licensee's operability evaluation concluded that based on the last testing of the PORV opening stroke time, the predicted peak pressure was determined to be below the adjusted Appendix G pressure limit. Therefore, the PORVs remained operable and capable of performing their LTOP functions.

The finding did not have a cross-cutting aspect because it was not reflective of current performance. (Section 1R21.3.b.(3))

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Aug 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

PORV Stroke Timing Acceptance Criteria Failed to Include Instrument Response Time

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," for the licensee's failure to ensure adequate acceptance limits were incorporated into test procedures. Specifically, the acceptance criteria for allowable pressurizer power operated relief valve (PORV) opening stroke time within the periodic test procedure was not consistent with the original design criteria for low temperature overpressure protection (LTOP) analysis. The acceptance criteria limits did not include the instrument response time. This finding was entered into the licensee's corrective action program and a review of most recent tests showed the valves stroke time were acceptable and the valves were operable.

The inspectors determined that this finding was more than minor because it was associated with the Barrier Integrity cornerstone attribute of design control and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. This finding was of very low safety significance (Green) because the function of the PORV opening in the required time had always been maintained and the finding did not result in non-compliance with LTOP TS. This finding did not have a cross-cutting aspect because it was not reflective of current performance. (Section 1R21.3.b.(4))

Inspection Report# : [2010006](#) (*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 : June 07, 2011