

Prairie Island 2

3Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNIT 2 REACTOR TRIP DUE TO OPERATION OF LOW PRESSURE TURBINE OUTSIDE ITS DESIGN.

A self-revealed finding of very low safety significance and a non cited violation (NCV) of Technical Specification (TS) 5.4.1 occurred on February 21, 2012 due the licensee's failure to establish, implement and maintain procedures regarding power operations. Specifically, procedure 2C1.4 contained information regarding the operation of the moisture separator reheater control valves that conflicted with Westinghouse Vendor Technical Manual (VTM) XH-2-164-1, "572 MW Steam Turbine Operation and Control Manual." This conflict caused a feedwater heater high level condition during Unit 2 low power operations which resulted in a manual reactor trip. The licensee initiated corrective action document 1325986 to document the trip. Corrective actions for this issue included revising procedure 2C1.4 to eliminate the conflicting information.

The inspectors determined that the failure to establish, implement and maintain procedures for power operation as required by TS 5.4.1 was a performance deficiency that required an SDP evaluation. The inspectors determined that this issue was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone. This finding also impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenged critical safety functions during shutdown as well as power operations. The inspectors determined that this issue was of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. The inspectors concluded that this issue was cross cutting in the Problem Identification and Resolution, Corrective Action Program (CAP) area, because the licensee's resolution of a previous Unit 1 trip, due to the same cause, identified the differences in operation between the VTM and the operating procedures. However, the procedures were not revised and no evaluation was performed to determine why operating outside the designer's recommendation was acceptable (P.1(c)).

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

BREAKER 212E-44 FAILURE DUE TO LACK OF PREVENTIVE MAINTENANCE

A self revealed finding of very low safety significance and an NCV of Technical Specification (TS) 5.4.1 occurred on January 19, 2012, due to the safety related breaker for the 21 reactor vessel gap cooling fan failing while in service. Specifically, preventive maintenance activities used to ensure the breaker remained operable were not performed in a timely manner. Corrective actions for this issue included repairing/replacing the breaker for the 21 reactor vessel gap cooling fan and performing an extent of condition review to determine whether timely preventive maintenance was completed on similar breakers.

The inspectors determined that this issue was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability (such as having to perform a reactor shutdown). The inspectors determined that the finding was of very low safety significance since it did not contribute to both the likelihood of a

reactor trip and the likelihood that mitigation equipment or functions would not be available. The cause of this finding was determined to be cross cutting in the Human Performance, Work Control area because the licensee failed to appropriately coordinate work activities to support the continued operability and reliability of breaker 212E 44 (H.3 (b)).

Inspection Report# : [2012002](#) (*pdf*)

Significance:  Nov 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Flammable Gas Bottles Installed and/or Stored in the Auxiliary Building

The inspectors identified a finding of very low safety significance and an associated NCV of Title 10, Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to check the adequacy of design for flammable gas bottles installed in areas located within the auxiliary building and their impact on safety-related cables and equipment. Specifically, the licensee failed to evaluate how a failure of the flammable gas bottles and a resulting fire or explosion at the installed locations could impact nearby safety-related structures, systems, or components. The licensee entered this issue into their corrective action program to review the placement of the flammable gas bottles.

The inspectors determined that the finding was more than minor because the finding was associated with the Initiating Events cornerstone's attribute of Protection against External Factors (Fire) and affected the cornerstone's objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was of very low safety significance due to the low fire initiating frequency and the availability of remaining mitigating systems. This finding did not have a cross-cutting aspect because the finding was not representative of current performance.

Inspection Report# : [2011012](#) (*pdf*)

Mitigating Systems

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM ADEQUATE PAST OPERABILITY EVALUATIONS AFTER DISCOVERING DEGRADED COMPONENT COOLING HEAT EXCHANGERS

The inspectors identified a finding of very low safety significance and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to adequately verify the adequacy of the design of systems needed during a Design Basis Accident (DBA). Specifically, the licensee failed to verify that the degradation identified during as-found inspections on the 21 and 22 Component Cooling (CC) Water Heat Exchangers would not have prevented the heat exchangers (HXs) from performing their safety functions if a DBA had occurred. The licensee entered this issue into their corrective action program as CAPs 1348544 and 1349624. The licensee concluded by additional analysis, and engineering judgment, that the Heat Exchangers had remained operable. The licensee was also considering flushing the heat exchangers more frequently; inspecting and cleaning the HXs more frequently; modifying the CC heat exchangers to provide a more effective flush; and changing plant documents and/or programs to require opening, inspecting, and cleaning of the HXs following major dredging near the plant intake. This issue was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Design Control and impacted the objective of ensuring the capability of systems that respond to initiating

events to prevent undesirable consequences. The as-found condition of the HXs challenged the capability of the CC system to fulfill its safety function; however, the licensee did not fully evaluate the condition. The finding was of very low safety significance because the design deficiency did not result in a loss of operability or functionality. The inspectors determined the finding was cross-cutting in the Human Performance, Work Control, Work Practices area because the licensee did not properly ensure that supervisory and management oversight of work activities, including contractors, supported nuclear safety (H.4(c)). Specifically, licensee personnel reviewing and approving Engineering Changes (ECs) 20044 and 20222 did not require the preparer to provide adequate technical support as part of the past operability evaluation discussed in the ECs.

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY ASSESS AND MANAGE RISK

A finding of very low safety significance and a non-cited violation (NCV) of 10CFR 50.65(a)(4) was identified by the inspectors due to the licensee's failure to properly assess plant risk upon obtaining information which challenged the continued availability of the 21 Residual Heat Removal (RHR) pump. On April 21, 2012, licensee personnel failed to promptly recognize the unplanned orange risk condition when the 21 RHR Pump vibrations exceeded the inservice test (IST) criteria of procedure SP 2092B, "Safety Injection Check Valve Test (Head Off) Part B: RWST to RHR Flow Path Verification." Corrective actions for this event included raising the reactor cavity level 20 feet above the reactor vessel flange per TS requirements.

The inspectors determined that this issue was more than minor because, if left uncorrected, the failure to properly assess and manage risk could result in a loss of shutdown cooling (a more significant safety concern) due to a loss of the RHR function. Since Unit 2 was shut down in Mode 6, the Senior Risk Analyst (SRA) assessed the risk significance of the event in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The SRAs reviewed Attachment 1, "Phase 1 Operational Checklists for Both PWRS and BWRS." The applicable checklist was Checklist 3, "PWR Cold Shutdown and Refueling Operation RCS Open and Refueling Cavity Level < 23' OR RCS Closed and No Inventory in Pressurizer Time to Boiling < 2 hours." The risk result was calculated to be $3.3E-7$. Since the total estimated change in core damage frequency was greater than $1.0E-7$ /yr, the potential risk contribution for this finding from large early release frequency was screened using the guidance of IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." The inspectors determined that this issue was of very low safety significance because it was not a design deficiency; it did not represent a loss of system safety function; it did not present a loss of safety function for one train for greater than the TS allowed outage time; and it did not screen as potentially risk significant due to a seismic, flooding or severe weather initiating event. This finding was determined to be cross-cutting in the Human Performance, Work Control area since the licensee did not plan and coordinate work activities consistent with nuclear safety (H.3(a)).

Inspection Report# : [2012003](#) (*pdf*)

Significance:  May 30, 2012

Identified By: NRC

Item Type: FIN Finding

FAILURE TO TAKE CORRECTIVE ACTION FOR REACTOR COOLANT SYSTEM LEVEL INDICATION ISSUES.

An inspector-identified finding of very low safety significance was identified due to the failure to take corrective action for a Condition Adverse to Quality. The inspectors determined that the failure to correct for the loss of reactor coolant system (RCS) level indication during the 2010 refueling outage was a performance deficiency that required an evaluation using the SDP. This deficiency was more than minor as the loss of RCS level indication during draining,

may result in level decreasing to the point where the function of the safety-related residual heat removal system may be affected. These level indication issues recurred during the RCS draining on March 6, 2012, resulting in a Notice of Unusual Event (NOUE) being declared. The licensee initiated Action Request (AR) 1329470 to evaluate this issue. This finding was determined to be crosscutting in the Problem Identification and Resolution, area because the licensee had not taken appropriate corrective actions to address the RCS level indication issues (P.1 (d)). This finding was not considered a violation, as the affected RCS level indicators were not considered safety-related.

Inspection Report# : [2012011](#) (*pdf*)

Significance:  May 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURE FOR DRAINING OF REACTOR COOLANT SYSTEM.

An inspector-identified finding of very low safety significance and a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, was identified due to the licensee's use of an inadequate procedure during draining of the RCS. The inspectors determined that the procedure used during the March 6, 2012, draining of the reactor coolant to the vessel flange level, did not contain adequate guidance for identifying and compensating for inadequate reactor vessel level indication due to over pressurization of the reactor vessel. This was a performance deficiency that required an evaluation using the SDP. This deficiency was more than minor as inaccurate RCS level indication resulted in plant operators declaring an NOUE and overdraining the RCS to the point where the function of the safety-related residual heat removal system was potentially affected. The licensee initiated Action Request (AR) 1329465 to evaluate this issue.

This finding was determined to be crosscutting in the Resources area, because the licensee has not maintained complete, up-to-date procedures for performing RCS draining (H.2(c)). The licensee had prior instances where RCS level indication was lost due to vessel overpressure; however, the licensee decided not to revise the procedures based on an incorrect assumption that the procedures contained adequate guidance.

Inspection Report# : [2012011](#) (*pdf*)

Significance:  May 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE CALCULATIONS FOR STEAM GENERATOR DRAINING.

An inspector-identified finding of very low safety significance and an NCV of 10 CFR 50, Appendix B, Criterion III, was identified due to the licensee's failure to update engineering calculations for the amount of nitrogen to be used during steam generator tube draining. Specifically, the failure to correctly include the number of plugged steam generator tubes into the engineering calculations was considered a performance deficiency. This deficiency was more than minor, as it contributed to the vessel overpressure that resulted in overdraining of the RCS on March 6 2012, and a NOUE. The licensee initiated ARs 01328420, 01329464, and 01328366 to evaluate this issue.

This finding was determined to be cross-cutting in the area of Resources, specifically having complete and up-to-date design documentation (H.2.(c)). Because the licensee inappropriately placed the engineering calculations in "non-active" status, they were not updated to reflect the actual number of plugged steam generator tubes. This resulted in the station procedure incorrectly stating the amount of nitrogen needed and the amount of water removed during steam generator tube draining.

Inspection Report# : [2012011](#) (*pdf*)

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ASSESS OPERABILITY OF CIRCUIT BREAKERS DUE TO INADEQUATE LUBRICATION

The inspectors identified a finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion V, on January 19, 2012, due to the licensee's failure to properly assess information contained in the Corrective Action Program (CAP) document 1322404 as required by Procedure FP OP OL 01, "Operability/Functionality Determination." Specifically, the CAP contained information that a safety related breaker failed to operate due to a lack of lubrication. However, an extent of condition assessment was not included in CAP 1322404 nor was an operability recommendation assigned to evaluate the potential impact on similar equipment. Corrective actions included performing an extent of condition review and ensuring that other safety related equipment remained operable.

The inspectors determined that this issue was more than minor because, if left uncorrected, the failure to properly assess equipment operability could result in inappropriately leaving plant equipment in service (a more significant safety concern). The inspectors determined that this finding was of very low safety significance because each of the questions listed under the Mitigating Systems Cornerstone column of IMC 0609.04, Table 4A could be answered "no." This finding was determined to be cross cutting in the Human Performance, Decision Making area because the licensee failed to use conservative assumptions when making decisions regarding the continued operability of the breakers discussed above (H.1(b)).

Inspection Report# : [2012002](#) (pdf)

Significance:  Mar 31, 2012

Identified By: NRC

Item Type: FIN Finding

FAILURE TO IMPLEMENT PROCEDURE USE AND ADHERENCE REQUIREMENTS WHILE DRAINING SODIUM HYPOCHLORITE DRAW DOWN TANK

A finding of very low safety significance was self revealed on January 7, 2012, due to chemistry personnel failing to comply with requirements contained in Procedure FP G DOC 03, "Procedure Use and Adherence," prior to draining the sodium hypochlorite draw down tank. Specifically, personnel failed to identify that the procedure used during the draining activity was inadequate. The use of an inadequate procedure led to a pipe break, the release of sodium hypochlorite into a bermed area, and an Alert classification under the licensee's emergency plan. No violations of NRC requirements were identified for this issue since the sodium hypochlorite system was non safety related. Corrective actions for this issue included reviewing chemistry procedure adequacy and increasing supervisory oversight of chemistry activities.

The inspectors determined that this issue was more than minor because it was a precursor to a significant event. Specifically, the licensee declared an ALERT emergency action level due to the sodium hypochlorite spill. The inspectors concluded that the finding was of very low safety significance since all of the questions located in the Mitigating Systems Cornerstone column of IMC 0609.04, Table 4a were answered "no." The inspectors determined that this finding was cross cutting in the Human Performance, Work Practices area because the licensee failed to ensure supervisory and management oversight of work activities such that nuclear safety was supported (H.4(c)).

Inspection Report# : [2012002](#) (pdf)

Significance:  Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Complete Immediate Operability Determination on Molded Case Circuit Breakers

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, was

identified by the inspectors due to the licensee's failure to complete an immediate operability determination as required by Procedure FP OP OL 01, "Operability/Functionality Determination." On October 27, 2011, the licensee identified that numerous molded case circuit breakers may not have received appropriate testing to demonstrate that the breakers would open to protect safety related equipment. Although a corrective action document was written, an immediate operability determination was not performed because the information in the document was viewed as programmatic in nature. Corrective actions for this event included performing the immediate operability determination and ensuring that operations personnel understood that operability determinations were required for programmatic concerns which questioned equipment operability.

The inspectors determined that this issue was more than minor because if left uncorrected, the failure to complete operability determinations could result in leaving inoperable plant equipment in service (a more significant safety concern). The inspectors determined that this issue was of very low safety significance because it was not a design deficiency; it did not represent a loss of system safety function; it did not present a loss of safety function for one train for greater than the Technical Specification (TS) allowed outage time; and it did not screen as potentially risk significant due to a seismic, flooding or severe weather initiating event. This finding was determined to be cross cutting in the Human Performance, Resources area because licensee personnel failed to follow procedures (H.4(b)).

Inspection Report# : [2011005](#) (*pdf*)

Significance:  Nov 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct a Condition Adverse to Quality

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly correct a condition adverse to quality. Specifically, the licensee failed to submit a license amendment request (LAR) to correct the non-conservative Technical Specification (TS) surveillance requirements in Section 3.8.1 for the emergency diesel generators (EDGs) allowable steady state frequency. The issue was originally identified and entered into the licensee's corrective

action program on September 8, 2006. During this inspection, the licensee entered the finding into their corrective action program to evaluate how to resolve the issue.

The inspectors determined that the finding was more than minor because the finding was associated with the Mitigating Systems cornerstone's attribute of Equipment Performance and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee could not be assured that the design requirements for the EDGs' system loads would operate within the appropriate design specifications if the EDGs were allowed to operate within the non-conservative TS allowable steady state frequency of = 58.8 Hertz (Hz) and = 61.2 Hz. As a result, the licensee established an administrative limit to limit operation of the EDGs to a frequency between 59.5 Hz and 60.5 Hz. The finding was of very low safety significance because it did not result in a loss of operability. The finding had a cross-cutting aspect in the area of human performance, decision-making because the licensee repeatedly delayed submitting the license amendment until a resolution was developed by an industry working group.

Inspection Report# : [2011012](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance: G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO TIMELY AUGMENT ON-SHIFT STAFF

A self-revealed finding of very low safety significance and an NCV of 10 CFR 50.54(q) was identified on January 7, 2012, due to the licensee's failure to follow and maintain their emergency plan in effect. The inspectors identified that the licensee's Emergency Response Organization failed to provide adequate staffing for initial facility accident response through the timely augmentation of on shift staffing as required by 10 CFR 50.47(b)(2). Specifically, four Radiological Protection positions and one Radiological Emergency Coordinator position were not staffed within the 30 minute commitment of Table 1, "Guidance for Augmentation of Plant Emergency Organization," in the Prairie Island Emergency Plan. As an interim corrective action, individuals were placed on shift to ensure that emergency response positions were filled within the required times.

The inspectors determined this performance deficiency was more than minor because it was associated with the emergency response organization performance attribute of the Emergency Preparedness Cornerstone. This finding also affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated in accordance with IMC 0609, Appendix B, "Emergency Preparedness SDP." Using the Actual Event Implementation Problem Sheet 2, the inspectors determined the finding to be of very low safety significance because it was not a failure to implement a risk significant planning standard. This finding was determined to be cross cutting in the Human Performance, Decision Making area because the licensee failed to communicate the basis for decisions to personnel who have a need to know the information in order to perform work safely and in a timely manner (H.1(c)).

Inspection Report# : [2012002](#) (*pdf*)

Significance: G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO TIMELY ACTIVATE ERDS

A self revealed finding of very low safety significance and an NCV of 10 CFR 50.72(a)(4) was identified on January 7, 2012, due to the licensee's failure to activate the Emergency Response Data System (ERDS) within one hour of an Alert declaration. Specifically, the ERDS was not made operable until 80 minutes after the Alert declaration due to task priority and equipment issues related to a system upgrade. Corrective actions for this issue included emphasizing the timely activation of ERDS with emergency responders and repairing the system upgrade equipment issues.

The inspectors determined this performance deficiency was more than minor because it was associated with the emergency response organization performance attribute of the Emergency Preparedness Cornerstone and affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated in accordance with IMC 0609, Appendix B, "Emergency Preparedness SDP," that considers a failure to activate ERDS as a failure to implement. Using the Actual Event Implementation Problem Sheet 2, the inspectors determined the finding to be of very low safety significance because it was not a failure to implement a risk significant planning standard. This finding was determined to be cross cutting in the CAP component of the Problem Identification and Resolution cross cutting area because the licensee failed to take appropriate corrective actions to address a previously identified ERDS activation issue in a timely manner (P.1(d)).

Inspection Report# : [2012002](#) (*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

Last modified : November 30, 2012