# Prairie Island 2
# 1Q/2014 Plant Inspection Findings

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## Initiating Events

**Significance:** G Jan 16, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
**Steam Generator Blowdown (SGBD) Pipe Support Anchorages Failure to Meet Design Requirements**
The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to meet the requirements of the American Institute of Steel Construction (AISC) specification. Specifically, the licensee did not use the specified minimum yield strength of the outside lift system (OLS) girder material to establish an appropriate factor of safety to qualify the allowable loads that can be safely handled by the OLS girder. The AISC factor of safety to failure ensured the OLS girder would maintain structural integrity (no permanent deformation or structural failure) when subjected to the applied loads (lifted load, wind load, design basis earthquake load). This issue was entered into the licensee's Corrective Action Program (CAP) as CAP 1404203, "OLS calculation used actual material strength rather than ASTM." The licensee performed a functionality assessment to demonstrate that there was reasonable assurance the OLS girder remained capable of performing its intended design functions.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the load handling reliability of the OLS girder inherently decreased when the AISC requirements were not met. The inspectors determined the finding could be evaluated using the SDP in accordance with Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown (defueled) conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRS and BWRS," for this finding and no Phase II or Phase III analysis was required. Therefore, the inspectors determined that this finding was of very low safety significance. No violation of regulatory requirements is associated with this finding. The inspectors identified that there was a Human Performance, Design Margin (H.6) cross-cutting aspect associated with this finding for the licensee failure to ensure the OLS girder reflected the intended design margins.
Inspection Report# : 2013011 *(pdf)*

**Significance:** G Jan 16, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
**Steam Generator Blowdown (SGBD) Pipe Support Anchorages Failure to Meet Design Requirements**
The inspectors identified a finding of very low safety significance (Green) involving the licensee's failure to meet the requirements of the American Institute of Steel Construction (AISC) specification. Specifically, the licensee did not use the specified minimum yield strength of the outside lift system (OLS) girder material to establish an appropriate factor of safety to qualify the allowable loads that can be safely handled by the OLS girder. The AISC factor of safety to failure ensured the OLS girder would maintain structural integrity (no permanent deformation or structural failure) when subjected to the applied loads (lifted load, wind load, design basis earthquake load). This issue was entered into the licensee's Corrective Action Program (CAP) as CAP 1404203, "OLS calculation used actual material strength

rather than ASTM." The licensee performed a functionality assessment to demonstrate that there was reasonable assurance the OLS girder remained capable of performing its intended design functions.

The inspectors determined the finding to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the load handling reliability of the OLS girder inherently decreased when the AISC requirements were not met. The inspectors determined the finding could be evaluated using the SDP in accordance with Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 -- Initial Screening and Characterization of Findings," Table 3. Since the finding was associated with shutdown (defueled) conditions, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that none of the conditions constituting a loss of control were met as described in Appendix G, Attachment 1, "Phase I Operational Checklists for Both PWRS and BWRS," for this finding and no Phase II or Phase III analysis was required. Therefore, the inspectors determined that this finding was of very low safety significance. No violation of regulatory requirements is associated with this finding. The inspectors identified that there was a Human Performance, Design Margin (H.6) cross-cutting aspect associated with this finding for the licensee failure to ensure the OLS girder reflected the intended design margins.
Inspection Report# : 2013011 *(pdf)*

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# Mitigating Systems

**Significance:** G Dec 31, 2013
Identified By: NRC
Item Type: FIN Finding
**FAILURE TO EVALUATE CORROSIVE EFFECTS OF BORIC ACID ON THE 22 RESIDUAL HEAT REMOVAL PUMP.**
The inspectors identified a finding of very low safety significance on October 7, 2013, due to the failure to perform an adequate boric acid evaluation in accordance with Procedure H2, "Boric Acid Corrosion Control Program." Specifically, the licensee failed to properly evaluate the impact of a boric acid leak following the leak coming into contact with carbon steel components on the 22 residual heat removal pump casing. Corrective actions included moving a carbon steel bolt for visual inspection and completing a technically adequate boric acid corrosion evaluation.
The inspectors determined that this issue was more than minor because if left uncorrected the failure to complete technically adequate boric acid corrosion evaluations could result in components with questionable structural integrity being left in service. 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 Human Performance, Decision Making area because the licensee failed to use conservative assumptions while determining the applicability of a previously completed boric acid evaluation to a current plant condition. No violation was identified since all NRC requirements were met (H.1(b)).
Inspection Report# : 2013005 *(pdf)*

**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 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:** G 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:** G Sep 30, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**FAILURE TO PROPERLY ASSESS D6 EDG OPERABILITY.**
An inspector-identified finding of very low safety significance (Green) and an NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures or Drawings,” was identified on August 15, 2013, due to the licensee’s failure to follow Procedure FP OP OL 01, “Operability/Functionality Determination.” Specifically, the licensee failed to evaluate the ability of the D6 emergency diesel generator (EDG) to perform its specified safety function over the expected voltage range of 3740-4580 volts after identifying that the radiator fan motor overload relays were improperly sized. Corrective actions for this issue included removing the D6 EDG from service to replace the relays and sharing the lessons learned from the failure to follow procedures with engineering personnel.

The inspectors determined that this issue was more than minor because it was associated with the design control and equipment performance 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, Decision Making area because the licensee failed to use conservative assumptions regarding EDG operating voltage when making decisions regarding the D6 EDG’s ability to perform its specified safety function with inadequately sized radiator fan motor thermal overload relays (H.1(b)).

Inspection Report# : 2013004 *(pdf)*

**Significance:** G 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 remained unvalid 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:** G 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 conservatisms 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.**
TThe 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 drivel 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)*

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# Barrier Integrity

**Significance:** G Jan 16, 2014
Identified By: NRC
Item Type: FIN Finding
**Outside Lift System (OlS) Girder Failure to Meet American Institute of Steel Construction (AISC) Requirements**
The inspectors identified a finding of very low safety significance and associated NCV of Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion III, "Design Control," for the failure to provide adequate design control measures for the steam generator blowdown (SGBD) pipe supports 8D-2SGB-1A, 2-RBDH-5294, 2-RBDH-606, 2 RBDH-363, 2-RBDH-350, 2-RBDH-349, 2-RBDH-339, and 2-RBDH-358. Specifically the SGBD pipe supports design was non-conservative with respect to Class I requirements as defined in Updated Safety Analysis Report (USAR) Section 12, "Plant Structures and Shielding", and referenced specifications. The licensee documented the violation in its CAP as CAPs 1405404 and 1412225 and performed an evaluation to demonstrate that there was reasonable assurance that the SGBD pipe supports remained capable of performing their safety functions.

The inspectors determined the finding was more than minor because the finding adversely affected the barrier integrity cornerstone and the associated cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee's calculations were not sufficient to demonstrate that the pipe supports were capable of properly supporting SGBD piping and isolation valves during design basis events, and hence ensure containment integrity. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, "The Significance Determination Process (SDP) for Findings At-Power," Appendix A, Exhibit 3 (Section B). The inspectors determined that this finding was very low safety significance (Green) because each of the screening questions was answered "no." Specifically, the SGBD pipe supports were subsequently determined to be capable of performing their safety function. The inspectors identified a Human Performance, Documentation (H.7) cross-cutting aspect associated with this finding for the licensee's failure to ensure complete, accurate, and, up-to-date design documentation. Specifically, the licensee failed to provide adequate oversight of design calculations and documentation of as-built conditions during the SGBD pipe support re-analysis conducted to support the steam generators replacement.

Inspection Report# : 2013011 *(pdf)*

**Significance:** G Jan 16, 2014
Identified By: NRC
Item Type: FIN Finding
**Outside Lift System (OLS) Girder Failure to Meet American Institute of Steel Construction (AISC) Requirements**
The inspectors identified a finding of very low safety significance and associated NCV of Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion III, "Design Control," for the failure to provide adequate design control measures for the steam generator blowdown (SGBD) pipe supports 8D-2SGB-1A, 2-RBDH-5294, 2-RBDH-606, 2 RBDH-363, 2-RBDH-350, 2-RBDH-349, 2-RBDH-339, and 2-RBDH-358. Specifically the SGBD pipe supports design was non-conservative with respect to Class I requirements as defined in Updated Safety Analysis Report (USAR) Section 12, "Plant Structures and Shielding", and referenced specifications. The licensee documented the violation in its CAP as CAPs 1405404 and 1412225 and performed an evaluation to demonstrate that there was reasonable assurance that the SGBD pipe supports remained capable of performing their safety functions.

The inspectors determined the finding was more than minor because the finding adversely affected the barrier integrity cornerstone and the associated cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee's calculations were not sufficient to demonstrate that the pipe

supports were capable of properly supporting SGBD piping and isolation valves during design basis events, and hence ensure containment integrity. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, "The Significance Determination Process (SDP) for Findings At-Power," Appendix A, Exhibit 3 (Section B). The inspectors determined that this finding was very low safety significance (Green) because each of the screening questions was answered "no." Specifically, the SGBD pipe supports were subsequently determined to be capable of performing their safety function. The inspectors identified a Human Performance, Documentation (H.7) cross-cutting aspect associated with this finding for the licensee's failure to ensure complete, accurate, and, up-to-date design documentation. Specifically, the licensee failed to provide adequate oversight of design calculations and documentation of as-built conditions during the SGBD pipe support re-analysis conducted to support the steam generators replacement.

Inspection Report# : 2013011 *(pdf)*

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## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

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## 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.

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## Miscellaneous

Last modified : May 30, 2014