

Braidwood 2

3Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: FIN Finding

FAILURE TO ADHERE TO STANDARDS OF OUTDOOR SECURED MATERIAL ZONES

The inspectors identified a finding of very low safety significance when licensee personnel failed to adhere to station housekeeping procedures to ensure materials that could become missile hazards during high winds or tornado conditions were not stored in the vicinity of the station's offsite power transformers. Specifically, the licensee failed to remove or secure three boards and a tarp within the secured material zone that were intended for work scheduled the next day. No violation of regulatory requirements was identified. The licensee entered this issue into their corrective action program as Issue Report (IR) 1243186 and IR 1246870. Corrective actions included plans to brief licensee staff and supervisors on the procedural requirements to ensure materials that could become missile hazards during high winds or tornado conditions were not stored in the vicinity of the station's offsite power transformers, a daily walkdown of outdoor areas to identify inappropriately stored material, reduction in the size of the secured material zone to credit buildings as a barrier, and painting to identify the boundaries of the secured material zone. The performance deficiency was determined to be more than minor because it was associated with the Human Performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, controls prescribed by station procedures to limit the likelihood of losing offsite power during adverse weather conditions were not adhered to by station personnel. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Initiating Events Cornerstone. Specifically, the inspectors answered 'No' to all of the Transient Initiator questions in IMC 0609.04, Table 4a, and therefore the finding screened as having very low safety significance (Green). This finding had a cross cutting aspect in the Work Practices component of the Human Performance cross cutting area [H.4(c)] since the licensee failed to provide supervisory and management oversight of work activities to ensure that nuclear safety was supported.

Inspection Report# : [2011004](#) (*pdf*)

Significance:  Jun 30, 2011

Identified By: NRC

Item Type: FIN Finding

FAILURE TO FOLLOW PROCEDURAL STANDARDS RELATED TO THE STORAGE OF OUTSIDE MATERIAL THAT COULD IMPACT OFSITE POWER AVAILABILITY

The inspectors identified a finding of very low safety significance when licensee personnel failed to adhere to housekeeping and severe weather abnormal operating procedures to ensure specified materials were not stored in the vicinity of the station offsite power transformers. The licensee had implemented these standards to reduce the possibility of material impacting offsite power during severe weather conditions, such as high winds. Corrective actions included the immediate removal of the material from the prohibited areas, reinforcement of the procedural standards to the licensee's staff, and entering the issue into the corrective action program as Issue Reports (IRs) 1221226 and 1221435. The inspectors determined that the failure to adhere to procedural standards was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Human Performance attribute of the Initiating Events Cornerstone and affected the cornerstone 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 inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." Using IMC 0609, Attachment 4, and because this finding was associated with the

Transient Initiator area of the Initiating Events Cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available, the finding was determined to be of very low safety significance (Green). The inspectors determined that this finding had a cross cutting aspect in the Work Practices component of the Human Performance cross cutting area (H.4(c)) because the licensee did not ensure adequate supervisory and management oversight of work activities such that nuclear safety was supported.
Inspection Report# : [2011003](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

INADEQUATE EVALUATION OF OPERATING EXPERIENCE CONTRIBUTES TO A UNIT 2 REACTOR TRIP

A finding of very low safety significance was identified by the inspectors when licensee personnel failed to adequately utilize operating experience that ultimately contributed to an August 16, 2010, Unit 2 reactor trip. Specifically, the licensee did not properly evaluate received operating experience as documented in Issue Report (IR) 259836, "OPEX Review: Isophase Bus Ground Faults." A portion of this document emphasized the need to consider re-evaluating the associated preventative maintenance frequency for deionizer grids, louvers, and dampers if the isophase air flow through these devices had been raised since the last inspection. The station had occasionally raised air flow since 2002 and no actions were taken to address this portion of the IR. On August 16, 2010, pieces of an isophase crossover damper broke off and caused a phase to ground short, resulting in a turbine trip and automatic reactor trip. The licensee's root cause evaluation determined that not properly evaluating this portion of the IR was a missed opportunity and likely contributed to the cause of the trip. The licensee entered this issue into their corrective action program (CAP) as IR 1101855. Corrective actions for this issue included reevaluating the operating experience and revising the preventative maintenance schedule to ensure crossover dampers are inspected and/or replaced prior to failure, with the scheduled periodicity to be based upon a thorough engineering analysis. The maintenance procedure for the isophase bus duct was also revised to include inspection criteria for the crossover dampers. The inspectors determined that the failure to adequately evaluate readily available industry operating experience in accordance with station procedure LS-AA-115, "Operating Experience Program," was a performance deficiency. Specifically, the station concluded the operating experience was not applicable to Braidwood station even though air flow through the dampers had been raised occasionally since 2002 and no actions to reevaluate the preventive maintenance frequency were taken. The finding was determined to be more than minor because it was associated with the Procedure Adequacy attribute of the Initiating Events Cornerstone and affected the cornerstone 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 performance deficiency contributed to the cause of the August 16, 2010, Unit 2 reactor trip. The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of Findings," Table 4a, for the Initiating Events cornerstone. The finding screened as having very low safety significance (Green) because it was determined not to contribute to both a plant trip and the likelihood that mitigating system equipment or functions would not be available. The inspectors did not identify a cross-cutting aspect associated with this finding since it was not considered to reflect current performance.

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

Mitigating Systems

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL HIGH ENERGY LINE BREAK BARRIER DOORS

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," when licensee personnel failed to ensure that Unit 1 and Unit 2 boundary doors credited as shut in design basis High Energy Line Break (HELB) room heat-up calculations were effectively controlled in station procedures. Specifically, doors separating divisions for the Unit 1 and Unit 2 Engineered Safety

Feature (ESF) Switchgear Rooms and Miscellaneous Electrical Equipment Rooms (MEERs) were not considered HELB boundaries in the station's Plant Barrier Impairment (PBI) procedure as required. Therefore, these doors could have been impaired for various reasons (e.g., maintenance) without the licensee ensuring that regulatory requirements were maintained, including those contained in the Technical Specifications (TSs) and 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The licensee entered this issue into their corrective action program as IR 1242942. Corrective actions included a revision to the station's PBI procedure to ensure that these barrier doors were considered HELB boundaries. The performance deficiency was determined to be more than minor because it was associated with the Protection Against External Events attribute 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). Specifically, if these doors had been impaired during a design basis turbine building HELB event with an active single failure of a HELB isolation damper, both electrical divisions in the ESF Switchgear Rooms or MEERs could have been adversely affected by the harsh steam environment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase - 1 Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. Specifically, the inspectors answered 'No' to all of the Mitigating Systems Cornerstone questions in Table 4a of IMC 0609.04 and, as a result, the finding screened as having very low safety significance (Green). Due to the age of this issue, it was not reflective of current licensee performance and therefore the inspectors did not assign a cross-cutting aspect to this finding.

Inspection Report# : [2011004](#) (pdf)

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

ASIATIC CLAMS IDENTIFIED IN THE ESSENTIAL SERVICE WATER SYSTEM SUPPLY TO THE AUXILIARY FEEDWATER SYSTEM

A finding of very low safety significance and an associated NCV of TS 3.7.5, "Auxiliary Feedwater (AF) System," was self-revealed when, on various occasions between March and July 2011, asiatic clam shells were identified in the 2A AF essential service water (SX) suction piping. Specifically, the asiatic clam shells in the 2A AF pump SX suction piping were of sufficient size to interfere with flow through the downstream steam generator flow control valves, which rendered the 2A AF pump inoperable for greater than the 72 hour Allowed Outage Time (AOT) prescribed in TS 3.7.5. This condition was determined to likely have existed since the late 1990's. The licensee entered this issue into their corrective action program as IR 1213669. Corrective actions included the removal of the clam shells from the 2A AF pump SX suction piping and completion of both an apparent cause and root cause evaluation. The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute 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 the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. The inspectors answered 'Yes' to the screening question, "Does the finding represent [an] actual loss of safety function of a single Train for > [greater than] its TS Allowed Outage Time?" since the inoperability of the 2A AF pump due to clam shells in the SX suction piping could have been present for at least one year. Therefore, a Phase 2 SDP evaluation was required using IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At Power Situations." Since the dominant risk was associated with external events, a Phase 3 analysis was required in order to estimate the risk significance of the issue. Therefore, a Region III Senior Reactor Analyst (SRA) performed a Phase 3 SDP evaluation of the finding. Based on the Phase 3 analysis, the finding was determined to be of very low safety significance (Green). This finding had a cross cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution cross cutting area [P.1(c)] since the licensee failed to thoroughly evaluate the identification of asiatic clam shells in the 2A AF SX suction piping in March 2011 and May 2011 and, as a result, implemented corrective actions that were inadequate.

Inspection Report# : [2011004](#) (pdf)

Significance: SL-IV Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

MODIFICATION OF THE AUXILIARY FEEDWATER SYSTEM WITHOUT PRIOR NRC APPROVAL

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," when licensee personnel failed to obtain a license amendment prior to implementing a proposed change to the plant that resulted in a more than minimal increase in the likelihood of occurrence of a malfunction of a structure, system or component important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). Specifically, the licensee performed a modification to the facility that permitted the Unit 1 and Unit 2 "A" AF trains to be shared between units and the 10 CFR 50.59 evaluation that was performed reached the erroneous conclusion that prior NRC approval was not required. The licensee entered this issue into the corrective action program as IR 1258017 and planned to submit a License Amendment Request (LAR) to the NRC for this design change. The violation was determined to be more than minor because the inspectors determined that the change required prior NRC approval. Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance.

The associated Performance Deficiency is tracked as item 2011-004-07.

Inspection Report# : [2011004](#) (pdf)

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: FIN Finding

MODIFICATION OF THE AUXILIARY FEEDWATER SYSTEM WITHOUT PRIOR NRC APPROVAL

The inspectors identified a finding of very low safety significance when licensee personnel failed to obtain a license amendment prior to implementing a proposed change to the plant that resulted in a more than minimal increase in the likelihood of occurrence of a malfunction of a structure, system or component important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). Specifically, the licensee performed a modification to the facility that permitted the Unit 1 and Unit 2 "A" AF trains to be shared between units and the 10 CFR 50.59 evaluation that was performed reached the erroneous conclusion that prior NRC approval was not required. The licensee entered this issue into the corrective action program as IR 1258017 and planned to submit a License Amendment Request (LAR) to the NRC for this design change. The violation was determined to be more than minor because the inspectors determined that the change required prior NRC approval. The underlying technical issue was evaluated through the SDP to determine the severity of the violation. In this case, the inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. Specifically, the inspectors answered "Yes" to Question 1 of the Mitigating Systems Cornerstone column of the Phase 1 worksheet because the inspectors concluded that this was a change confirmed not to result in the loss of operability. Based upon this Phase 1 screening, the inspectors concluded that the issue was of very low safety significance (Green). This finding had a cross-cutting aspect in the Operating Experience component of the Problem Identification and Resolution (PI&R) cross-cutting area [P.2.(b)] because the licensee failed to make adequate use of known industry operating experience in the screening of a modification prior to installation.

The associated Traditional Enforcement Item is tracked as item 2011-004-06.

Inspection Report# : [2011004](#) (pdf)

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW MAINTENANCE RULE PROCEDURE

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to adhere to licensee procedure ER AA 310, "Implementation of the Maintenance Rule." Specifically, the licensee failed to adhere to the requirements of procedure ER AA 310 when crediting availability of the Unit 1 and Unit 2 'B' train AF pumps by not having documented restoration actions (i.e. Risk Management Actions (RMAs)) during quarterly in service

testing surveillances that involved the manual cycling of cooling water valves. The licensee entered the issue into the corrective action program as IR 1251652 and took immediate corrective actions to revise the applicable portion of the Excel spreadsheet that documented restoration actions. The licensee was also considering a more robust process for the documentation of restoration actions to credit equipment availability. The performance deficiency was determined to be more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of system that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, procedural requirements to credit the availability of the 'B' train AF pumps were not met. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase - 1 Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. The inspectors answered 'No' to all of the Mitigating Systems Cornerstone questions in Table 4a of IMC 0609.04 and, as a result, the finding screened as having very low safety significance (Green). This finding had a cross cutting aspect in the Work Control component of the Human Performance cross cutting area [H.2(c)] since during performance of the 1B and 2B AF pump surveillances that involved the manual cycling of cooling water valves, the licensee did not have complete and accurate documentation related to the implementation of RMAs for these surveillances.

Inspection Report# : [2011004](#) (pdf)

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

DESIGN OF AUXILIARY FEEDWATER SYSTEM INCLUDED VOIDS IN SAFETY-RELATED ALTERNATE SUCTION FLOWPATHS

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," when licensee personnel failed to properly analyze the configuration of the SX connections to the AF pumps. Specifically, a section of the piping was intentionally maintained empty (voided), but was not previously analyzed. This condition existed since initial plant construction. The issue was entered into the licensee's corrective action program as IR 1173517. Additionally, the licensee filled the voided sections of pipe, restoring compliance with the licensed design basis. 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 systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the unverified configuration might have rendered each of the AF pumps inoperable. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase - 1 Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. Specifically, the inspectors answered 'Yes' to Question 1 of the Mitigating Systems Cornerstone column of the Phase 1 worksheet because the inspectors concluded that this finding was confirmed not to result in a loss of operability. This conclusion was reached after reviewing tests performed by the licensee. The tests demonstrated there was reasonable assurance that the AF system would perform its safety function in the installed configuration. Based on this Phase 1 screening, the inspectors concluded that the issue was of very low safety significance (Green). Due to the age of this issue, the inspectors did not identify a cross cutting aspect associated with this finding because it was not indicative of current licensee performance.

Inspection Report# : [2011004](#) (pdf)

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Embedment Plate Design Deficiencies

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to properly evaluate the structural steel embedment plate which supports Safety Injection (SI) pipe supports 1SI06025V and 1SI06030S. Specifically, the licensee failed to demonstrate compliance with the American Institute of Steel Construction (AISC) and Seismic Category I linear elastic requirements. The licensee entered this issue into their corrective action program and planned

calculation revisions and modifications as needed to restore design margins.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of the availability, reliability, and capability of the SI piping and pipe supports. Specifically, the licensee used the actual material yield stress to ensure the structural steel embedment plate would maintain structural integrity when subjected to design loads. This is contrary to the AISC and Seismic Category I linear elastic requirements to use the specified minimum yield stress of the material. The inspectors determined that the finding was of very low safety significance because the finding did not result in loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because it was associated with a calculation from the 1980s and was not reflective of current performance. (Section 1R17.2.b.(1))

Inspection Report# : [2011008](#) (pdf)

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Permanent Lead Shielding Added to Safety Injection and Chemical Volume and Control System Piping.

The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to properly evaluate the Unit 1 SI subsystem 1SI06 and the Unit 1 Chemical Volume and Control System (CVCS) subsystem 1CV18 piping and pipe supports. Specifically, the licensee failed to demonstrate compliance with the AISC and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code for the 1SI06 and 1CV18 piping and pipe supports. The licensee entered this

issue into their corrective action program and planned calculation revisions and modifications as needed to restore design margins.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of the availability, reliability, and capability of SI piping and pipe supports and CVCS piping and pipe supports. Specifically, the licensee did not perform an analysis to ensure compliance with AISC and ASME Section III requirements with the addition of permanent lead shielding to ensure the 1SI06 and 1CV18 piping and pipe supports would maintain structural integrity when subjected to design basis loads. The inspectors determined that the underlying finding was of very low safety significance because the finding did not result in loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because this was a calculational deficiency that did not occur within the past three years and was not reflective of current performance. (Section 1R17.2.b.(2))

Inspection Report# : [2011008](#) (pdf)

Significance:  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM POST VT-3 EXAMINATION ILLUMINATION VERIFICATION IN ACCORDANCE WITH ASME CODE

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.55a(g)4 when a licensee vendor examiner failed to perform VT 3 visual examinations in accordance with the American Society of Mechanical Engineers (ASME) Code. Specifically the examiner failed to verify the adequacy of illumination following a snubber VT 3 examination. The licensee entered this issue into the corrective action program as IR 1208643 and, following an extent of condition evaluation, re-performed 18 VT-3 visual examinations. The inspectors determined that the licensee examiner's failure to verify the adequacy of the illumination level following the examination of a snubber was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and 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). Absent NRC identification, the licensee would not have performed the ASME Code-required examinations for a number of components, which could have allowed a rejectable condition to go undetected. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance

Determination Process,” Attachment 4, “Phase I Initial Screening and Characterization of Findings,” Table 4a for the Mitigating Systems Cornerstone and answered “No” to the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). This finding had a cross cutting aspect in the Work Practices component of the Human Performance cross-cutting area (H.4(b)) because the licensee did not effectively communicate expectations regarding procedural compliance and licensee personnel did not follow procedures.
Inspection Report# : [2011003](#) (pdf)

Significance: G Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ENSURE THAT THE DESIGN OF THE AUXILIARY FEEDWATER SUCTION PIPING WAS ADEQUATE TO PREVENT AIR ENTRAINMENT FOLLOWING A SEISMIC OR TORNADO EVENT

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” when licensee personnel failed to analyze whether the design of the auxiliary feedwater (AF) system ensured that air entrained into the system following a postulated seismic or tornado event did not prevent the system from performing its safety function. Specifically, licensee personnel failed to evaluate the failure of non-seismically qualified condensate storage tank suction piping during an earthquake or tornado that would cause the operating auxiliary feedwater pumps to draw air from the break location, potentially air-binding the pumps. The licensee entered this issue into their corrective action program as 1202772 to identify any required changes to the design of the system and performed an operability evaluation. The inspectors determined that the failure to analyze whether air entrained into the AF system following a postulated seismic or tornado event would prevent the system from performing its safety function was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, “Issue Screening,” because it was associated with the Protection Against External Events attribute of the Mitigating Systems Cornerstone and 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 the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 4, “Phase I Initial Screening and Characterization of Findings,” Table 4a for the Mitigating Systems Cornerstone and answered “No” to the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). The inspectors determined that there was no cross-cutting aspect associated with this finding because it did not reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2011003](#) (pdf)

Significance: G Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE QUALITY REVIEW OF TEMPORARY CONSTRUCTED SCAFFOLDS INSTALLED THROUGHOUT THE PLANT

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” related to an inadequate quality review of temporarily constructed scaffolds installed throughout the plant. Specifically, the licensee failed to adhere to procedural requirements associated with installed temporary scaffolds prior to reaching 90 days in service. The procedural action required that the temporary scaffold be converted to a permanent scaffold or that a 10 CFR Part 50.59 evaluation be performed for the specific scaffold to ensure that the temporary scaffold did not adversely affect structures, system and components (SSCs) before reaching 90 days in service. Corrective actions included implementing the procedural requirements for the identified scaffolds and entering the issue into the corrective action program as IR 1206426. The inspectors determined that the failure to adhere to the standards of a quality procedure was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, “Issue Screening,” because the performance deficiency, if left uncorrected, would have the potential to become a more significant safety concern. Specifically, by not taking the actions prescribed by procedure, the temporary structures would not have an adequate qualification if left in the plant for greater than 90 days and may not meet all standards of the station’s licensing basis. The inspectors determined the finding could be evaluated using the

SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). The inspectors determined that this finding had a cross cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area (P.1(d)) because the licensee did not take appropriate correct actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, the licensee did not take appropriate corrective actions to address a very similar issue identified as NRC inspection finding 05000456/2010004 01; 05000457/2010004 01, "Failure to Follow Procedures for Temporary Scaffolds."

Inspection Report# : [2011003](#) (pdf)

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

INCORRECT EQUIPMENT USED DURING AN AUXILIARY FEEDWATER SUCTION PIPING FLUSH SURVEILLANCE

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed when incorrect equipment was used during an AF suction piping flush surveillance. Specifically, the use of an incorrect and unqualified drain hose resulted in the hose rupturing and spraying water onto nearby safety related equipment, rendering the equipment inoperable until equipment tests could be performed. The licensee immediately terminated the flushing operation and entered this issue into the corrective action program as IR 1226235. The licensee also initiated a root cause evaluation to identify additional corrective actions. The inspectors determined that the use of an improper hose during an AF suction piping flush surveillance was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and 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 the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings." Using Table 2 of IMC 0609, Attachment 4, the inspectors determined that the finding affected the secondary short-term decay heat removal function of the Mitigating Systems Cornerstone. The inspectors answered "No" to all Mitigating Systems Cornerstone questions in Table 4a, "Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstone," and, as a result, the finding was determined to be of very low safety significance (Green). The inspectors determined that this finding had a cross cutting aspect in the Work Practices component of the Human Performance cross cutting area (H.4 (a)) because when faced with the choice between two different hoses for a flushing activity, workers proceeded with the evolution in the face of uncertainty.

Inspection Report# : [2011003](#) (pdf)

Significance:  May 04, 2011

Identified By: NRC

Item Type: FIN Finding

Failure to Adequately Document and Justify Continued Operability of the Auxiliary Feedwater System.

A finding of very low safety significance was identified at the Braidwood and Byron Stations by the inspectors when licensee personnel failed to adequately document and justify continued operability of the auxiliary feedwater (AF) system. Specifically, licensee evaluations of known voids in the AF alternate source suction piping did not provide an adequate technical basis to support operability of the AF pumps during a suction swap-over scenario. Subsequently, the licensee filled the voids and a Root Cause Evaluation (RCE) was initiated under Issue Report (IR) 1194196 (Braidwood) and IR 1194324 (Byron). The RCE was initiated to determine why prior opportunities for discovery of the inadequate void acceptance basis were missed and to develop associated corrective actions.

The inspectors determined the finding was more than minor because, if left uncorrected, the failure to recognize conditions that could render equipment inoperable had the potential to lead to a more significant safety concern. Because the finding was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event, the inspectors concluded that

the finding was of very low safety significance (Green). This finding was associated with a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because the licensee did not use conservative assumptions and did not verify the validity of underlying assumptions in their evaluations of the AF suction piping voids. (H.1(b)) (Section 4OA5.1.7.b)

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

Significance:  May 04, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

Incorrect Installation of Annunciator System Wiring.

A finding of very low safety significance was self-revealed at Braidwood Station when licensee personnel failed to properly install portions of the annunciator system circuitry in accordance with design specifications. Specifically, wiring in the annunciator system clock circuitry (the portion of the circuitry that allows annunciators to change status) was incorrectly installed, which resulted in an unexpected loss of all Braidwood Unit 2 control room annunciators on March 24, 2011. The licensee entered the issue into the corrective action program (CAP) as IR 1192465, corrected the wiring to provide the intended function, and revised procedures used to energize and de-energize the system.

The finding was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, annunciator system redundancy was adversely affected and when the annunciator panels were de-energized, the ability of operators to identify and respond to abnormal plant conditions was degraded. Because the finding was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event, the inspectors concluded that the finding was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because it was not indicative of current performance. (Section 4OA5.2.3.b)

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

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE INSTRUCTIONS FOR MEASURING ECCS VOIDS

A finding of very low safety significance and associated Non Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to establish instructions for measuring pipe voids detected during surveillances of the emergency core cooling systems for gas accumulation. Specifically, instructions to measure the size of gas voids detected during venting at each safety injection and residual heat removal system vent location were not provided so that the effect of the void on system operability could be evaluated. The licensee entered this issue into the corrective action system and initiated procedure revisions to provide additional guidance for recording data to size voids identified during venting operations. The performance deficiency was determined to be more than minor because if left uncorrected it would have the potential to lead a more significant safety concern. The finding screened as of very low safety significance because it was a qualification deficiency confirmed not to result in loss of operability or functionality. Specifically, a qualitative assessment of the voids detected by venting since the implementation of the licensee's resolution of GL 2008 01 established reasonable assurance that they did not represent loss of operability. 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 not assigned.

Inspection Report# : [2011002](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

DEGRADED FIRE SEAL BETWEEN TWO FIRE ZONES

A finding of very low safety significance and an associated NCV of License Condition 2.E was identified by the

inspectors when licensee personnel failed to maintain a fire seal between Unit 2 Fire Zone 11.6 2 on the 426 elevation and Unit 2 Fire Zone 11.5A 2 on the 414 elevation of the auxiliary building and adjacent to the containment structure in accordance with the approved Fire Protection Program. This issue was entered into the licensee's corrective action program as IR 1126534. Corrective actions consisted of implementing a fire watch for this area until the seal was repaired. In addition, the licensee performed an extent of condition review and entered additional related deficiencies into the correction action program. The inspectors determined that the failure to identify and implement corrective actions for a degraded fire seal between two fire areas was contrary to the approved Fire Protection Plan and was a performance deficiency. The degraded fire seal was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Protection Against External Factors (Fire) and 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). Specifically, fire seals are designed to confine a fire within an area for a time to allow for mitigating actions. A degraded fire seal would not assure this confinement function would be met for the designed and expected duration. The inspectors determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The inspectors identified that this issue had a cross-cutting aspect in the Problem Identification and Resolution area because licensee personnel failed to identify and therefore assess this issue completely, accurately, and in a timely manner within the station's CAP (P.1(a)).

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

Significance: SL-IV Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Submit a Licensee Event Report per 10 CFR 73(a)(2)(v) (Section 40A3.5)

A Severity Level IV NCV of 10 CFR 50.73(a)(2)(v) was identified by the inspectors when licensee personnel failed to report known conditions that could have prevented the fulfillment of the Residual Heat Removal (RHR) system to perform its designed emergency core cooling safety function while operating in the shutdown cooling mode of operation, within 60 days of discovery. Specifically, upon receipt of Westinghouse Nuclear Safety Advisory Letter (NSAL) 0904, "Presence of Vapor in Emergency Core Cooling System/Residual Heat Removal System in Modes 3 or 4 Loss of Coolant Accident Conditions," the licensee determined that a loss of RHR system safety function occurred when both trains of the RHR system were placed into the shutdown cooling mode of operation above 200 degrees Fahrenheit (°F). The station identified four instances in which both trains of RHR were operated in the shutdown cooling mode of operation above 200°F over the previous 3 year period. The licensee, however, failed to report to the NRC within 60 days that the RHR safety function had been lost. The station entered this issue into the CAP as IR 1155372. Corrective actions included the issuance of Licensee Event Report (LER) 05000456/457/2010-007-00 on January 18, 2010.

The inspectors determined that the failure to report this LER in accordance with NRC regulations was a performance deficiency since this issue had the potential to impact the regulatory process. Therefore, this violation was dispositioned through the traditional enforcement process. The inspectors determined that this issue was a Severity Level IV violation based on a similar example referenced in NRC Enforcement Policy Supplement I, Example D.4. The inspectors evaluated this issue under the Reactor Oversight Process (ROP) and did not identify a performance deficiency that could be assessed under the SDP. (Section 40A2.2).

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

Barrier Integrity

Significance:  Jun 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURE DURING REACTOR VESSEL HEAD LIFT

A finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.4.1 was self revealed on April 21, 2011, when licensee personnel failed to suspend a reactor vessel head lift after it became apparent that there was a large deviation between the crane's actual load cell indication and the expected indication.

Immediate corrective actions for this issue included resetting the head on the reactor vessel flange, and resolving the load cell indication issue prior to lifting the head again. The licensee also entered this issue into the corrective action program as IR 1206020. The inspectors determined that the failure to adhere to a station quality procedure was a performance deficiency. This issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Human Performance attribute of the Barrier Integrity Cornerstone and affected the 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. The inspectors determined the finding could be evaluated in accordance with IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," and determined that the finding was Green since it did not require a Phase 2 or Phase 3 analysis. The inspectors determined that this finding had a cross cutting aspect in the Decision Making component of the Human Performance cross-cutting area (H.1(b)) because licensee personnel failed to use conservative assumptions in decision making after identifying a large deviation between actual and expected load cell indications during a head lift evolution.

Inspection Report# : [2011003](#) (pdf)

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ACCOUNT FOR VORTEXING WHEN CALCULATING THE MAXIMUM AVAILABLE TIME TO SECURE THE CONTAINMENT SPRAY ADDITIVE TANK

The inspectors identified a Non Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having a very low safety significance (Green) for the failure to account for vortexing when determining the maximum available time to secure the containment spray additive tank. Specifically, the applicable calculation assumed that nitrogen would enter the system when the tank was completely drained. The licensee entered this issue into the corrective action program and, at the time of the inspection, planned to revise the applicable calculation. The performance deficiency was determined to be more than minor because it was associated with the Containment Barrier cornerstone attribute of Structures, Systems, Components, and Barrier Performance and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as of very low safety significance because it was a design deficiency of the physical integrity of the reactor containment that did not: (1) affect the barrier function of the control room against smoke or a toxic atmosphere; (2) represent an actual open pathway in the physical integrity of reactor containment; and (3) involve an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined that this finding had a cross cutting aspect in the area of Problem Identification and Resolution because the licensee did not thoroughly evaluate external operating experience. [P.2(a)]

Inspection Report# : [2011002](#) (pdf)

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE THE EFFECTS OF DYNAMIC LOADS AT THE CONTAINMENT SPRAY DISCHARGE PIPING

The inspectors identified a Non Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having a very low safety significance (Green) for the failure to evaluate the effects of dynamic loads at the containment spray discharge piping. The inspectors were concerned because portions of the containment spray discharge piping are normally voided by design and neither the structural design nor operation of the system addressed the dynamic loads that would result when the voided piping is rapidly filled following system initiation. The licensee entered this issue into the corrective action program and, at the time of the inspection, planned to review the design to ensure compliance. The performance deficiency was determined to be more than minor because it was associated with the Containment Barrier cornerstone attribute of Structures, Systems, Components, and Barrier Performance and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as Green because it did not affect either core damage frequency or large early release frequency. The inspectors determined that this finding had a cross cutting aspect in the area of Problem Identification and Resolution because the licensee did not thoroughly evaluate external operating experience. [P.2(a)]

Emergency Preparedness

Significance: G May 04, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Untimely Declaration of a Notice of Unusual Event

The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR 50.54(q) at Braidwood Station after licensee personnel failed to promptly declare a Notice of Unusual Event in accordance with the Braidwood Emergency Plan. Specifically, on March 24, 2011, contrary to the Braidwood Station Radiological Emergency Plan Annex, the licensee did not declare Emergency Action Level (EAL) MU6 (Unusual Event) within 15 minutes of indications of a loss of greater than 75 percent of Unit 2 main control room annunciators. Corrective actions included implementation of Standing Order 11-007; additional training; and procedures revisions, which were all intended to clarify the function of the annunciator test push buttons in determining whether a loss of annunciators has occurred.

The finding 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 implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using the emergency preparedness significance determination process, Sheet 2, "Actual Event Implementation Problem," the inspectors determined the finding was of very low safety significance (Green) because the licensee failed to implement a risk significant planning standard (10 CFR 50.47(b)(4)) during an actual Notice of Unusual Event. This finding was associated with a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee did not ensure that procedures were accurate and adequate to assure nuclear safety. Specifically, when provided with sufficient evidence that the annunciators were not properly responding, licensee personnel delayed implementation of the Emergency Plan until further information was obtained. This was due to inaccurate and conflicting procedures and a lack of knowledge of the annunciator system. (H.2(c)) (Section 4OA5.2.5.b)

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

Significance: SL-IV Feb 10, 2011

Identified By: NRC

Item Type: VIO Violation

(Traditional Enforcement) Changes to EAL Basis Decreases the Effectiveness of the Plan without Prior NRC Approval (1EP4.1)

A Severity Level IV, Cited Violation of 10 CFR 50.54(q) was identified by the inspector for the licensee's change to the emergency plan which decreased the effectiveness of the plan without NRC approval. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 21, to delay the 15 minute classification time by the dispatching of personnel, reporting the notification of a fire from the field, and extinguishing the fire. As a result, this change indefinitely extends the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The violation affected the NRC's ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC Commission approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction of the capability to perform a risk significant planning standard function in a timely manner. The violation is cited because no corrective action had been taken to restore compliance since the issue was entered in the licensee's corrective action program in December 2009. (Section 1EP4)

The associated Performance Deficiency is tracked as item 2010503-02. Response letter received 03/30/2011, Acknowledgement letter sent back on 07/21/2011.

Significance: **G** Feb 10, 2011

Identified By: NRC

Item Type: FIN Finding

Changes Made to EAL Basis that Decreased the Effectiveness (1EP4.1)

A Green finding involving a Severity Level IV, Cited Violation of 10 CFR 50.54(q) was identified by the inspector for the licensee's change to the emergency plan which decreased the effectiveness of the plan without NRC approval. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 21, to delay the 15 minute classification time by the dispatching of personnel, reporting the notification of a fire from the field, and extinguishing the fire. As a result, this change indefinitely extends the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The performance deficiency was more than minor and of very low safety-significance using Manual Chapter (MC) 0612 and MC 0609, Appendix B, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Therefore, the performance deficiency was a finding. Using MC 0609, Appendix B, the inspector determined that the finding had a very low safety significance. The inspectors also determined that the finding had a cross-cutting aspect in the area of Human Performance, decision making because the licensee did not recognize that the change made to the EAL basis document decreased the effectiveness of the emergency plan. (H.1.(b)) (Section 1EP4)

The associated Traditional Enforcement violation is tracked as item 2010503-01
Inspection Report# : [2010503](#) (pdf)

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

Significance: **SL-IV** Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROVIDE COMPLETE AND ACCURAE INFORMATION IN LER 05000457/2010-04-00

A Severity Level IV Non Cited Violation of 10 CFR 50.9 was identified by the inspectors regarding Licensee Event Report 05000457/2010 004 00, "Unplanned Limiting Condition for Operation Entry Due to Low Header Pressure on

the 2B Essential Service Water Pump,” which was determined to not be complete and accurate in all material aspects. Specifically, the licensee’s Licensee Event Report stated that an evaluation had determined that the both units and trains of essential service water were capable of mitigating the effects of design basis events. The evaluation referenced in this statement had not been performed at the time the Licensee Event Report was submitted. The inspectors determined that this issue was a Severity Level IV violation based on a similar example referenced in NRC Enforcement Policy Supplement I, Section 6.9 “Inaccurate and Incomplete Information of Failure to Make a Required Report” example D.1 (i.e., a licensee fails to make a required report which, had it been submitted, would have resulted in, for instance, increasing the scope of the next regularly scheduled inspection). The inaccurate information was considered to be material to the NRC because it potentially affected our assessment of this LER and assessment if this station should have reported this issue under a loss of safety function. This issue was entered into the corrective action program and corrective actions included the station performing the analysis mentioned in the LER. The inspectors had previously reviewed the ROP aspect related to this finding and a self revealed violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was documented in Section 1R22 of NRC Integrated Inspection Report 05000456/2010-004-03; 05000457/2010-004-03 for this issue.

Inspection Report# : [2011002](#) (*pdf*)

Last modified : January 04, 2012