

Braidwood 2

2Q/2011 Plant Inspection Findings

Initiating Events

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 OFFSITE 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)

Significance:  Sep 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE TO IDENTIFY AND CORRECT WATER DISCHARGED TO THE TURBINE BUILDING FLOOR DURING CONDENSATE REJECT

A self-revealed finding of very low safety significance (Green) was identified for the failure to correct a condition that resulted in water being discharged to the turbine building floor during the reject of condensate from the condenser hotwell. Specifically, water had been observed to overflow to the turbine building floor in multiple instances in the past during hotwell condensate reject. However, the licensee did not implement corrective actions to correct this condition or evaluate its impact on plant equipment as required by the licensee's corrective action program. The water discharged from the condensate hotwell reject during the Unit 2 trip caused a reactor trip of Unit 1 on August 16, 2010. The licensee entered this issue into its corrective action program and changed the operation of the condensate reject from an automated action to a manual action controlled by the operators.

The finding was determined to be more than minor because it was associated with the Initiating Events Cornerstone attribute of configuration control, and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability. The finding screened as very low safety significance (Green) because a Phase 3 evaluation determined that it resulted in a delta core damage frequency of $5.6E-7$ /year with Large Early Release Frequency (LERF) not being a risk contributor. No violation of NRC requirements was identified because the deficiencies that contributed to the reactor trip were associated with nonsafety-related components. The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program component, because the licensee did not have a low threshold for identifying issues and did not identify issues completely. [P.1(a)] (Section 40A5.3)

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

Mitigating Systems

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:  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:  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*)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES FOR TEMPORARY SCAFFOLDS

The inspectors identified a Green finding and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B,

Criterion V, "Instructions, Procedures, and Drawings," related to the control of temporary scaffolds. Specifically, the licensee's procedure for the installation, modification, and removal of scaffolds was not followed on a routine basis for temporary scaffolds that remained in the plant for greater than 90 days. The licensee entered this issue into the Corrective Action Program as Issue Report 1095900. Corrective actions for this issue included walk downs of temporary scaffolds that had been in place for greater than 90 days utilizing the permanent scaffold checklist, and an assignment to ensure the procedure was followed in the future.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix E, "Examples of Minor Issues." Specifically, this issue was similar to the more than minor criteria in Example 4.a, "Insignificant Procedural Errors," in that the licensee failed to perform engineering evaluations on similar issues, or if the later evaluation determined that safety-related equipment was adversely affected. The finding was of very low safety significance because there was not a confirmed loss of operability of any mitigating system component. This finding was associated with the cross-cutting aspect of Decision-Making in the Human Performance cross-cutting area. Specifically, the licensee had not made safety-significant or risk significant decisions by utilizing the systematic scaffolding construction process to ensure adequate quality and therefore adequate safety was maintained (H.1(a)).

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

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

Significance:  Sep 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNPLANNED COOLING WATER FLOW REDUCTION DURING SX IST SURVEILLANCE TEST

A self-revealed Green finding and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified after the licensee failed to follow procedures during an essential service water inservice test on August 24, 2010. Specifically, during the section of the procedure utilized to establish testing conditions, the licensee throttled the wrong valve resulting in an unplanned reduction in flow to safety-related structures, systems, and components. This flow reduction resulted in the Train "B" equipment being declared inoperable for approximately 5 minutes. The licensee entered this issue into the CAP as IR 1105448.

Corrective actions for this issue included returning the Unit 2 essential service water system to operable status by restoring the required valve lineup and a corrective action assignment to provide additional training to the operating crews on the use of human error prevention techniques.

The inspectors determined that this finding was more than minor, because it was associated with the Human Performance attribute of the Mitigating Systems Cornerstone and impacted the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance based on a Phase 3 Significance Determination Process analysis that conservatively bounded the risk of this event to be less than $1.0E-7$ /yr. The inspectors concluded that this finding was associated with the cross-cutting aspect of Work Practices in the Human Performance cross-cutting area because adequate human error prevention techniques were not effectively used to ensure that the surveillance activity was performed properly (H.4(a)).

This links to traditional enforcement item 2011-002-01 - SL IV.

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

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

FOREBAY INSPECT-AND-CLEAN ACTIVITIES DID NOT ENSURE THAT SSCs WILL BE CAPABLE OF PERFORMING THEIR SAFETY FUNCTION

The inspectors identified a Green finding and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to establish adequate controls to ensure that forebay inspect-and-clean activities provided assurance that systems, structures, and components would be capable of performing their safety function during inspect-and-clean intervals. Specifically, the inspectors noted that during the event on August 16, 2010, the operability margin of one train of the essential service water system decreased to zero under forebay fouling conditions that were less than the pre-established limiting conditions. The licensee entered this

issue into its corrective action program (CAP).

The finding was determined to be more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, forebay conditions would have been allowed to degrade between inspect-and-clean intervals and the potential adverse impact to the essential service water system and its supported equipment was not evaluated. The finding screened as very low safety significance because it was a design deficiency that was confirmed not to result in an actual loss of operability or functionality. The inspectors determined that this finding had a cross cutting aspect in the area of human performance, decision-making component, because the licensee did not make safety-significant or risk-significant decisions using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety was maintained. [H.1(a)] (Section 4OA5.1)

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

Significance:  Sep 17, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow the Operability Determination Procedure

The inspectors identified a Green finding and an associated NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when licensee personnel failed to adhere to Operability Determination Procedure OP AA 108-115 after identifying a potential auxiliary feedwater (AFW) system design vulnerability. Specifically, since May 15, 2007, the licensee had questioned the motor-driven AFW system’s capability to effectively transfer its water source from the Condensate Storage Tank (CST) to the essential service water system during a hypothetical catastrophic failure of the non-seismic CST. The lack of involvement in bringing this issue to the attention of the operating crew, lack of quality in evaluating the issue, and length of time the questions had been unanswered were not consistent with the Operability Determination process. The licensee entered this issue into their CAP as Issue Report (IR) 1114604. Corrective actions planned included performing an Operability Evaluation and a corrective action assignment to ensure a rigorous evaluation was performed on the motor-driven AFW pump’s motor and breaker.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, “Issue Screening,” because the issue 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, the AFW pump operability was not fully evaluated by the licensee. The finding was of very low safety significance because the issue was not a confirmed loss of operability and did not represent a risk significant issue based on the plant’s design backup capability to remove decay heat via the primary feed and bleed method. This finding had a cross-cutting aspect in the area of Human Performance for Decision-Making (H.1(a)). Specifically, the licensee did not make a safety-significant or risk-significant decision using the Operability Evaluation systematic process, especially when faced with uncertain or unexpected plant conditions involving a potential design vulnerability to the plant to ensure safety was maintained. (Section 4OA2.1.b.2.c)

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

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

Significance:  Sep 17, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Untimely Corrective Action for Lack of Water Hammer Analysis on the Recycle Holdup tank.

The inspectors identified a Green finding and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," when licensee personnel failed to promptly correct a previously identified NCV regarding the lack of analysis for water hammer loads on the Recycle Holdup Tank (RHUT) inlet piping induced by Residual Heat Removal (RHR) system relief valve discharges. Specifically, the licensee failed to complete the necessary piping analysis to address potential water hammer effects since the issue was initially identified in June 2007 and documented as a NCV in February 2009. The licensee entered this issue into the CAP as IR 1117296 and planned to accelerate the completion schedule for the analysis.

The finding was more than minor because it was associated with the design control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of maintaining the radiological barrier function of the containment. The finding was of very low safety significance because it did not represent an actual open pathway from containment. This finding has a cross-cutting aspect in the area of Human Performance for Resources (H.2(a)) because the licensee failed to maintain long-term plant safety by completing the necessary piping load calculations in a timely manner. (Section 40A2.1.b.3.b)

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

Emergency Preparedness

Significance:  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 40A5.2.5.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.

Inspection Report# : [2010503](#) (*pdf*)

Significance:  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 : October 14, 2011