# Braidwood 1
# 4Q/2015 Plant Inspection Findings

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## Initiating Events

**Significance:** G Dec 31, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
**FAILURE TO ESTABLISH ADEQUATE FEEDWATER PUMP OPERATIONAL GUIDANCE DURING PLANT SHUTDOWN**
A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1, “Procedures,” was self-revealed on October 5, 2015, due to the licensee’s failure to establish and maintain adequate guidance for operating the Unit 1 and Unit 2 motor driven main feedwater pump (MDFWP) during plant shutdown conditions. Specifically, on October 4, 2015, during a Unit 2 plant shutdown, the Unit 2 MDFWP was placed in service at low forward feedwater flow conditions and was manually tripped when the pump’s main journal bearing temperature exceeded the procedural limit. Subsequent review, determined that the procedural limit was too low as previously recognized by historic station specific operating experience. This issue was entered into the licensee’s corrective action program (CAP) as Issue Report (IR) 2565486. The inspectors determined that the performance deficiency was more than minor because the issue was associated with the Procedural Quality attribute of the Initiating Event cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the performance deficiency contributed to a loss of main feedwater event that upset plant stability and challenged the critical safety function of removing decay heat via the steam generators in Mode 3. For Unit 1, the increased potential for a loss of main feedwater event existed under similar conditions. The inspectors determined that the finding was of very low safety significance based upon a detailed risk evaluation. The inspectors concluded that this finding did not have a cross cutting aspect because the performance deficiency was greater than 3 years old and, therefore, not indicative of recent performance.

Inspection Report# : 2015004 *(pdf)*

**Significance:** G Jun 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
**FAILURE TO UPDATE THE UFSAR - THIMBLE TUBE INSPECTION PROGRAM**
The inspectors identified a Severity Level IV NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.71(e), “Periodic Update of the Updated Final Safety Analysis Report (UFSAR),” and an associated Green finding for the licensee’s failure to update the UFSAR with a description of the Thimble Tube Inspection Program to reflect information submitted to the NRC in response to NRC Bulletin 88-09. Specifically, the licensee did not update Section 5.2.4, “Inservice Inspection and Testing of Reactor Coolant Pressure Boundary,” of the UFSAR to include the Incore Thimble Tube Inspection Program, which provided the basis for leakage integrity for this portion of the reactor coolant pressure boundary. The licensee entered this issue into their Corrective Action Program (CAP) and identified a recommended action to incorporate the Incore Thimble Tube Inspection Program into the UFSAR. The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to update the UFSAR

with the Thimble Tube Inspection Program could result in reductions or elimination of the program without seeking prior NRC approval and insufficient thimble tube inspections could also result in the failure to detect thimble tube wear prior to an un-isolable leak in the reactor coolant pressure boundary. Additionally, the failure to update the UFSAR was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and adversely affected the Cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding screened as having very low safety significance (Green), because the licensee's failure to update the UFSAR with a description of the Thimble Tube Inspection Program had not resulted in degradation of a thimble tube such that the reactor coolant system leak rate for a small break loss of coolant accident was exceeded and did not affect systems used to mitigate a loss of coolant accident. Therefore, the inspectors answered "No" to Questions A.1 and A.2, of Exhibit 1, "Initiating Events Screening Questions," identified in Appendix A of IMC 0609 and the finding screened as having very low safety significance. Violations of 10 CFR 50.71(e) 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 Sections 6.1.c.7 and 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the UFSAR as required by 10 CFR 50.71(e) had not yet resulted in an unacceptable change to the facility (e.g. thimble tube structural integrity was maintained) or procedures and the associated finding was of very low risk significance. The finding was the result of an error made in excess of 10 years ago, and thus was not indicative of current licensee performance. Therefore, no cross-cutting aspect was identified.
Inspection Report# : 2015002 *(pdf)*

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# Mitigating Systems

**Significance:** G Dec 31, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
**FAILURE TO ESTABLISH A WRITTEN PROCEDURE FOR A LOSS OF FEEDWATER EVENT IN MODE 3**
A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1, "Procedures," was self revealed on October 5, 2015, due to the licensee's failure to establish a written procedure for combating emergencies and other significant events, as required by Regulatory Guide 1.33, "Quality Assurance Program Requirements." Specifically, upon a loss of feedwater in Mode 3 (Hot Standby), which is an expected design and licensing basis event, the licensee did not have a written procedure as established by the Regulatory Guide. This issue was entered into the licensee's CAP as IRs 2566239 and 2565513. The inspectors determined the finding to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, it was associated with the Mitigating Systems cornerstone Procedural Quality attribute, and adversely impacted the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the absence of a procedure(s) complicated the operator response to the loss of feedwater event in Mode 3. The inspectors determined the finding to be of very low safety significance in accordance with IMC 0609, Appendix A, "The SDP for Findings at Power," dated September 7, 2012, Exhibit 2, since the inspectors answered "No" to the Mitigating Systems questions under Section A, "Mitigating Systems, Structures, and Components and Functionality." The inspectors did not identify a cross cutting aspect associated with this finding, because it was confirmed not to be reflective of current performance due to the age of the performance deficiency.
Inspection Report# : 2015004 *(pdf)*

**Significance:** G Aug 28, 2015

Identified By: NRC
Item Type: NCV Non-Cited Violation
**Failure to Ensure that Circuits Associated with Pressurizer PORVs and Block Valves Were Free of Fire Damage (Section 1R05.6.b)**
Green. The inspectors identified a finding of very low safety significance, and an associated NCV of the Braidwood Station facility operating license condition 2.E associated with the Fire Protection Program for the licensee's failure to ensure that the safe shutdown capability was independent of the fire area and thus free of fire damage. Specifically, in the event of a fire in the control room, cable spreading rooms, or electrical cable penetration areas the circuits associated with the Pressurizer Power Operated Relief Valve (PORV) block valves, which are relied upon to safely shutdown the plant, could be affected and may not be available due to fire-induced failures. The licensee entered this issue into their Corrective Action Program, established fire watches, and intended to perform plant modifications to correct the issue.
The inspectors determined that the issue was more than minor because fire-induced circuit failures could impair the operation of the PORV block valves and complicate shutdown of the plant in the event of a fire in the control room, cable spreading rooms, or electrical cable penetration areas. The finding affected the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance based on a detailed risk-evaluation by a Region III Senior Reactor Analyst. This finding was not associated with a cross-cutting aspect because the finding was not representative of the licensee's current performance. (Section 1R05.6.b)

Inspection Report# : 2015007 *(pdf)*

**Significance:** G Jun 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
**MECHANIC JOINT LEAKAGE ACCEPTED FOR CONTINUED SERVICE WITHOUT CODE CORRECTIVE ACTIONS**
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," for the licensee's failure to follow a procedure for completing an American Society of Mechanical Engineers (ASME) Section XI Code pressure test.
Specifically, the licensee failed to implement the required corrective actions or evaluations for evidence of leakage (boric acid deposits) identified on a containment spray (CS) system valve bolted connection prior to returning this component to service. The licensee entered this issue into their CAP and initiated actions to clarify procedures to ensure the ASME Code Section XI, Paragraph IWB-3522, requirements were implemented, and components with Code relevant conditions were corrected or evaluated prior to returning them to service. The performance deficiency was determined to be more than minor in accordance with IMC 0612, because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to adhere to procedure ER AA-330-001 was based upon the licensee's decision to return a component exhibiting evidence of boric acid leakage to service without Code corrective measures or evaluation. Additionally, this type of error could result in inservice failure of equipment. Therefore, this finding affected the Mitigating Systems Cornerstone attribute of Equipment Performance 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 finding screened as having very low safety significance (Green), because the licensee's failure to adhere to procedure ER AA-330-001 and remove valve 1CS011B from service with a Code relevant condition did not result in operation of the plant with an inoperable system or component. Therefore, the inspectors answered "Yes" to Question A.1 of Exhibit 2, "Mitigating Systems Screening Questions," identified in Appendix A of IMC 0609, and the finding screened as having very low safety significance. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Conservative Bias because the licensee staff did not use a decision-making practice that emphasized prudent choices over those that were simply allowable. Specifically, the failure to remove valve 1CS011B from service with a relevant condition was based upon the licensee's decision that this was an allowable option because the ASME Code Section XI paragraph was not clear.

Inspection Report# : 2015002 *(pdf)*

**Significance:** G Jun 30, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
**CONTROL ROOM CHILLER INOPERABILITY DUE TO HIGH OIL CONTENT IN THE REFRIGERANT**
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 on April 28, 2015, when licensee personnel failed to establish adequate procedural controls related to how much oil could be added or removed from the control room chillers without affecting its functionality. Specifically, the 0A control room ventilation (VC) chiller was declared inoperable due to high oil content in the refrigerant, which caused reduced cooling efficiency to the point of non-functionality. The licensee entered this issue in their CAP, restored the 0A VC chiller to operable status on May 1, 2015, and performed an evaluation to establish the acceptable level of oil migration to retain functionality of the VC chiller. The performance deficiency was determined to be more than minor in accordance with IMC 0612, because, it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences (i.e. core damage). The finding screened as having very low safety significance (Green), because it did not result in the loss of safety function, and did not result in an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that the associated finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because the licensee staff did not implement effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, following three documented issues with VC chiller performance, Engineering determined that the issues were related to high oil content in the chiller refrigerant. Based on this information, corrective actions related to optimizing refrigerant/oil levels in the chiller were recommended to the Plant Health Committee, which were approved for immediate implementation. However, the actions were not appropriately incorporated into the work control process or the CAP, which led to them not being implemented in a timely manner.
Inspection Report# : 2015002 *(pdf)*

**Significance:** G Mar 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
**FAILURE TO ENSURE THAT TEMPORARY STRUCTURES DID NOT ADVERSELY IMPACT SAFETY DURING POSTULATED PROBABLE MAXIMUM PRECIPITATION 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 establish adequate measures to ensure that temporary equipment and structures stored at the station did not create an unanalyzed condition during a probable maximum precipitation (PMP) event. Specifically, the licensee's processes did not prevent the placement and storage of temporary equipment in a manner that could result in a condition not bounded by the station's plant design that prevents rainwater from impacting safety-related equipment. This issue was entered into the licensee's Corrective Action Program (CAP) as Issue Report (IR) 2473324.
The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Design Control 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, the failure to ensure that credited rainwater runoff flow paths were not impeded by the storage of temporary structures resulted in the licensee not ensuring the availability, reliability, and capability of systems that would be needed to respond to an initiating event. This assessment was based upon the inspector's review of current flood barrier margins,

assumed turbine building below-grade flooding levels, the number of safety-related or risk-significant systems that could be adversely affected, and the absence of an abnormal operating procedure or any other similar procedure that could create additional margin. The inspectors determined that because the finding did not involve a confirmed loss or degradation of equipment or function specifically designed to mitigate a PMP external flooding event, the issue was of very low safety significance. The inspectors determined that the finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.
Inspection Report# : 2015001 *(pdf)*

**Significance:** G Mar 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
**FAILURE TO ADEQUATELY EVALUATE OPERABILITY OF A DEGRADED CONTROL ROOM CHILLER**
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 the operability determination process after identifying a degraded condition on the 0B control room chiller. This issue was entered into the licensee's CAP as IR 2435363.
The inspectors determined that the performance deficiency was 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 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, the licensee did not provide an adequate basis to support 0B control room chiller availability, reliability, and capability to respond to an initiating event. The inspectors determined that the finding was of very low safety significance because all questions related to structures, systems, and components (SSCs) and functionality in the associated significance determination process (SDP) were answered "No." The finding had a cross-cutting aspect in the Design Margins component of the Human Performance cross-cutting area because the licensee failed to adequately evaluate whether the degraded oil return line in the 0B control room chiller had sufficient margin to assure operability (H.6).
Inspection Report# : 2015001 *(pdf)*

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# Barrier Integrity

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# Emergency Preparedness

**Significance:** G Mar 31, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
**FAILURE TO ACTIVATE THE EMERGENCY RESPONSE ORGANIZATION DURING AN ACTUAL EVENT**
A self-revealed finding of very low safety significance and an associated NCV of 10 CFR 50.54(q)(2) and 10 CFR 50.47(b)(2) was identified on July 23, 2014, when after a Notice of Unusual Event was declared and the Shift Manager activated the Emergency Response Organization (ERO), several of the ERO members failed to respond as required. This issue was entered into the licensee's CAP as IR 2469494.
The inspectors determined that the performance deficiency was more than minor because it was associated with the

Emergency Response Organization Readiness attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Since the finding involved a failure to comply with emergency preparedness requirements, the inspectors reviewed IMC 0609, Appendix B, Attachment 2, and determined that the finding was of very low safety significance because it involved a degraded planning standard function. The finding had a cross-cutting aspect in the Change Management component of the Human Performance cross-cutting area because the licensee did not appropriately evaluate and implement changes when the new ERO Augmentation System was implemented (H.3).
Inspection Report# : 2015001 *(pdf)*

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the cover letters to security inspection reports may be viewed.

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## Miscellaneous

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