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## Braidwood 2 – Quarterly Plant Inspection Findings

### 4Q/2017 – Plant Inspection Findings

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#### Initiating Events

#### Mitigating Systems

**Significance:** G Dec 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to prevent Secondary Missiles Following a Postulated High Energy Line Break**

The inspectors identified a finding of very low safety significance and an associated NCV of Title 10 of the *Code of Federal Regulations* (CFR) Part 50,

Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that the design basis for the main steam safety valve (MSSV) room maintenance hatches was maintained. Specifically, the high energy line break (HELB) analysis performed for the MSSV rooms and steam tunnels prior to initial construction concluded that no secondary missiles were generated as a result of a HELB although maintenance hatches in the ceiling of the MSSV rooms were identified to become secondary missiles following a HELB in the MSSV rooms and steam tunnels. As part of their immediate corrective actions, the licensee entered this issue into their corrective action program (CAP) as AR 4075641 and performed an operability evaluation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control 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). In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating

Systems Screening Questions,? the inspectors answered ?Yes? to Question 1, ?If the finding is a deficiency affecting the design or qualification of a mitigating SSC [Structure, System, and Component], does the SSC maintain its operability or functionality?? because the finding did not result in a loss of operability or functionality. Therefore, this finding was of very low safety significance. No cross-cutting aspect was assigned to this finding as it was not reflective of current performance.

Inspection Report# : 2017008 (*pdf*)

**Significance:**  Dec 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Inadequate Blow Out Panel Design Control**

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 the licensee originally designed the MSSV blow out panels in a manner that prevented them from functioning properly. The licensee entered this issue into their CAP as AR 4075641 and corrected the design issue in March of 2009.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control 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). In accordance with IMC 0609, ?Significance Determination Process,? Attachment 0609.04, ?Initial Characterization of Findings,? and Appendix A, ?The Significance Determination Process for Findings At-Power,? Exhibit 2, ?Mitigating Systems Screening Questions,? the inspectors answered ?Yes? to Question 1, ?If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?? because the finding did not result in a loss of operability or functionality. Therefore, this finding was of very low safety significance. No cross-cutting aspect was assigned to this finding as it was not reflective of current performance.

Inspection Report# : 2017008 (*pdf*)

**Significance:**  Dec 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Properly Correct Errors in Design Analysis for Main Steam Line Break in Main Steam Tunnel**

. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, ?Corrective Action,? when the licensee failed to promptly correct errors in the design analysis for a main steam line break in the main steam tunnel. As part of their immediate corrective actions, the licensee entered this issue into their CAP as AR 4075641 and completed an operability evaluation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control 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). In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors answered "Yes" to Question 1, "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" because the finding did not result in a loss of operability or functionality. Therefore, this finding was of very low safety significance. No cross-cutting aspect was assigned to this finding as it was not reflective of current performance.

Inspection Report# : 2017008 (*pdf*)

**Significance:**  Dec 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Untimely Corrective Action for Secondary Missiles**

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," when the licensee failed to promptly address the identification of secondary missiles following a High Energy Line Break event. As part of their immediate corrective actions, the licensee entered this issue into their CAP as AR 4075641 and performed an operability evaluation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control 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). In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors answered "Yes" to Question 1, "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" because the finding did not result in a loss of operability or functionality. Therefore, this finding was of very low safety significance. No cross-cutting aspect was assigned to this finding as it was not reflective of current performance.

Inspection Report# : 2017008 (*pdf*)

**Significance:**  Dec 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Inaccurate Analysis of Record**

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 the licensee failed to maintain an accurate and up-to-date analysis of record

for a postulated HELB in the MSSV rooms and steam tunnels. As part of their immediate corrective actions, the licensee entered this issue into their CAP as AR 4075641 and performed an operability evaluation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control 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). In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors answered "Yes" to Question 1, "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" because the finding did not result in a loss of operability or functionality. Therefore, this finding was of very low safety significance. No cross-cutting aspect was assigned to this finding as it was not reflective of current performance.

Inspection Report# : 2017008 (*pdf*)

**Significance:**  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Adequately Implement Surveillance Frequency Program for the Deferral of a Technical Specification Surveillance**

A finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.5.19.b, "Surveillance Frequency Program," were identified by the inspectors for the failure to implement the requirements contained in the surveillance frequency control program when making a change to the specified frequency of TS Surveillance Requirement (SR) 3.3.1.11. On May 3, 2017, the licensee improperly deferred a TS required surveillance through the preventive maintenance deferral process due to a belief that it was a preventive maintenance activity and not an activity supporting a TS SR. The licensee captured this issue in their corrective action program (CAP) as Issue Report (IR) 4009050 with an action to reestablish the surveillance at an 18 month frequency and to perform it before the end of the Unit 2 refueling outage (RFO) A2R19.

The performance deficiency was determined to be of more than minor safety significance because if left uncorrected it could lead to a more significant safety concern. The finding screened as being of very low safety significance (Green) because it did not result in the loss of operability or functionality of any system, structure, or component (SSC). The inspectors determined that this finding had a cross-cutting component in the area of human performance, work management aspect, because the licensee had failed to utilize a work process that included proper coordination with different groups or job activities. Specifically, licensee personnel conducting the deferral did not coordinate the activity with personnel in either the operations or regulatory assurance departments. Knowledgeable personnel in either of these station organizations could have identified that the wrong process for deferral was being utilized.

Inspection Report# : 2017002 (*pdf*)

**Significance:**  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Adequately Implement Technical Specification Surveillance Frequency Requirements into Implementing Procedures**

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were identified by the inspectors for the licensee's failure to have appropriate

implementing procedures for TS SR 3.9.3.2. Specifically, procedure BwIS NR 203, "Post Accident Neutron Monitoring System Discriminator Adjustment," did not provide for determining and checking the discriminator voltage for the system at an 18 month frequency, as specified by TS SR 3.9.3.2. The licensee captured this issue into their CAP as IR 4010147 with an action to revise the surveillance frequency to every 18 months for each channel.

The performance deficiency was determined to be more than minor because it impacted the procedure quality attribute of the Mitigating Systems Reactor Safety Cornerstone. The finding screened as being of very low safety significance (Green) because it did not result in the loss of operability or functionality of any SSC. The licensee performed a review of the records associated with the last three years of operation and did not find any instances in which the post accident neutron monitors (PANMs) were used to satisfy TS 3.9.3, "Nuclear Instrumentation," requirements. No cross-cutting aspect was associated with this finding because it was confirmed not to be reflective of current licensee performance due to the age of the performance deficiency.

Inspection Report# : 2017002 (*pdf*)

## Barrier Integrity

## Emergency Preparedness

## Occupational Radiation Safety

## Public Radiation Safety

**Significance:** G Nov 02, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Implement Adequate Radiological Controls for Treated Liquid Radioactive Effluents Containing Tritium**

The inspectors identified a finding of very low safety significance and an associated NCV of Title 10 of the *Code of Federal Regulations* (CFR), Part 20.1406(c), when the licensee failed to conduct operations to minimize the introduction of residual radioactivity onto the site. Specifically, the licensee failed to identify and evaluate the environmental risk and control work practices with a credible mechanism to prevent spills and leaks from reaching groundwater at the circulating water blowdown (CWBD) area, a radiologically unrestricted area in the licensee's owner controlled area. Specifically, tritium contaminated sump water was intermittently pumped to the environs. The licensee documented this finding in their corrective action program (CAP) as Issue Report (IR) 4020644.

The failure to conduct operations and control work practices with a credible mechanism to prevent spills and leaks to reach groundwater and minimize residual radioactivity onto the site represented a licensee performance deficiency. The performance deficiency was of more than minor significance because it was associated with the Program and Process attribute of the Public Radiation Safety cornerstone and adversely affected the cornerstone objective of ensuring the adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. In accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because the issue involved a radioactive effluent release, but did not: (1) represent a substantial failure to implement the radioactive effluent release program; or (2) result in public exposure that exceeded the dose values in Appendix I to 10 CFR Part 50 and/or 10 CFR 20.1301(e) limits. The inspectors determined that this finding had a cross-cutting component in the area of Human Performance, in the aspect of Challenging the Unknown, because licensee personnel did not stop when faced with uncertain conditions or evaluate and manage risk before proceeding.

Inspection Report# : 2017003 (*pdf*)

**Significance:** G Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Adequately Implement and Maintain the Radiological Environmental Monitoring Program by Collecting Representative Samples from the Principal Food Pathways**

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix I, Section IV(B), were identified by the inspectors for the licensee's failure to establish an appropriate surveillance and monitoring program in order to provide data on measurable levels of radiation and radioactive materials in the environment to evaluate the relationship between quantities of radioactive material released in effluents and resultant radiation doses to individuals from principal pathways of exposure. This was an NRC identified finding for failure to implement and maintain the licensee's radiological environmental monitoring program (REMP) by collecting representative samples from the highest deposition coefficient (D/Q) quadrant locations during annual REMP sampling and collections of food products in 2015. On May 25, 2016, during a review of the station's annual radiological environmental operating report for 2015, the inspectors noted that the licensee documented missed samples in three out of four quadrants where the principal food pathways were grown within the 10 kilometers from the station and missed milk samples. The licensee's corrective actions included, but were not limited to, revising the applicable REMP procedures and investigating the possibility of growing the principal food pathways on the licensee's owner controlled area or other approved licensee property within the 10 kilometer site radius.

The performance deficiency was determined to be of more than minor safety significance because it impacted the program and process attribute of the Public Radiation Safety Cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of the public from radiation. Specifically, the licensee failed to implement effective sample collection from sample locations for food products from three of the major quadrants during annual REMP sampling and collections in 2015. The licensee's Offsite Dose Calculation Manual (ODCM), as written, did not meet 10 CFR Part 50, Appendix I, which requires the licensee to establish and provide data on measurable levels of radiation and radioactive materials in the site environs. The finding was determined to be of very low safety significance in accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," because it only involved the licensee's REMP. The inspectors concluded that the cause of the issue involved a cross cutting component in the area of human performance, change management aspect, because the licensee did not use a systematic process for evaluating and implementing changes in their REMP sampling and collection program.

Inspection Report# : 2017002 (*pdf*)

## Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## Miscellaneous

Current data as of : February 01, 2018

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