



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

May 9, 2014

Mr. Michael J. Pacilio
Senior VP, Exelon Generation Co., LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NRC INTEGRATED INSPECTION
REPORT 05000456/2014002; 05000457/2014002**

Dear Mr. Pacilio:

On March 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Braidwood Station, Units 1 and 2. The enclosed report documents the results of this inspection, which were discussed on April 10, 2014, with Ms. M. Marchionda, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, three NRC-identified findings of very low safety significance were identified. Two of these findings involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating these violations as Non-Cited Violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Braidwood Station.

M. Pacilio

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Additionally, as we informed you in the most recent NRC integrated inspection report, cross-cutting aspects identified in the last 6 months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter (IMC) 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects, which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross-cutting aspect assigned, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at Braidwood Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading_rm/adams.htm (the Public Electronic Reading Room).

Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-456; 50-457
License Nos. NPF-72; NPF-77

Enclosure:
Inspection Report 05000456/2014002;
05000457/2014002 w/Attachment:
Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-456; 50-457
License Nos: NPF-72; NPF-77

Report No: 05000456/2014002; 05000457/2014002

Licensee: Exelon Generation Company, LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, IL

Dates: January 1 through March 31, 2014

Inspectors: J. Benjamin, Senior Resident Inspector
A. Garmoe, Resident Inspector
F. Ramirez, Resident Inspector
J. Corujo-Sandin, Acting Resident Inspector
B. Boston, Reactor Inspector
T. Go, Health Physicist
M. Perry, Resident Inspector
Illinois Emergency Management Agency

Approved by: E. Duncan, Chief
Branch 3
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000456/2014002; 05000457/2014002; 01/01/2014 – 03/31/2014; Braidwood Station, Units 1 & 2; Adverse Weather Protection, Fire Protection.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. Two of these findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., Greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects were determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.4.1, "Procedures," when licensee personnel failed to specify adequate entry conditions in Abnormal Operating Procedure (AOP) 0BwOA ENV-1, "Adverse Weather Conditions," utilized to monitor and mitigate a frazil ice event at the lake screen house (LSH). Specifically, the licensee had established a frazil ice entry condition without adequately considering the plant data available to control room operators and without accounting for instrument accuracy and uncertainty. The licensee entered this issue into their Corrective Action Program (CAP) as Issue Report (IR) 1613056, "NRC Identified Ice Forming at the LSH CW [Circulating Water] Trash Bars," and IR 1617385, "NRC Questions Regarding Frazil Ice." Corrective actions included revising the frazil ice entry conditions based upon essential service water temperature with margin to account for instrument uncertainty and essential service water heat input.

The inspectors determined that the performance deficiency was more than minor, because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to establish and maintain adequate entry conditions into 0BwOA ENV-1 could result in additional time for ice to accumulate on plant components before mitigating actions would be initiated. Any delay in mitigating this type of event could increase the likelihood of a loss or partial loss of essential service water event or other transient. A detailed risk evaluation was performed by an NRC Regional Senior Risk Analyst (SRA) and the finding was determined to be of very low safety significance (Green). This finding did not have an associated cross-cutting aspect because the inspectors determined that the most significant error occurred when the entry criteria was established in November 2010, and therefore was not indicative of current performance. (Section 1R01.1b)

- Green. The inspectors identified a finding of very low safety significance when licensee personnel failed to ensure that the LSH trash rake would be capable of clearing ice buildup on the trash rake bars. Specifically, the licensee failed to ensure that the trash rake system was functional prior to the onset of weather conditions that could promote frazil ice production and after a repair following a trash rake failure during those conditions. The licensee entered this issue into their CAP as IR 1613767, “LSH Trash Rake Will Not Traverse on Rails.” The licensee corrected this issue by utilizing a vendor to re-furbish and repair the trash rake. Additionally, the licensee revised their procedures to include additional methods to clear ice from the trash bars.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to have any mitigating systems available during weather conditions that could promote frazil icing of the lake intake increased the likelihood of a plant transient including a loss of essential service water event. A detailed risk evaluation was performed by an NRC Regional SRA and the finding was determined to be of very low safety significance (Green). This finding had a cross-cutting aspect in the Restoration component of the Problem Identification and Resolution cross-cutting area because the organization failed to take effective corrective action to address a non-functioning LSH trash rake in a timely manner commensurate with safety after restoring the equipment to Operations for use during weather conditions that could promote frazil icing conditions (P.3). (Section 1R01.2)

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of Braidwood Operating License Condition 2.E, “Fire Protection Program,” when licensee personnel failed to identify fire doors that did not conform to the current licensing basis standard within the National Fire Protection Agency (NFPA)-80 Code that required fire doors to automatically shut and latch without assistance. Specifically, station personnel were not adequately performing a daily fire door testing procedure and, as a result, failed to identify a number of fire doors that were not conforming to the standard. As a result, IRs were not generated when degraded conditions existed. The licensee entered this issue into their CAP as IR 1629689, “Unclear Direction in 0BwOS FP.7.2.D-1.” Corrective actions included training plant operators on the expectations regarding generation of IRs for any abnormal condition in the plant, and requiring the use of a copy of the surveillance procedure in the field while completing the daily fire door surveillance.

The inspectors determined that the performance deficiency was more than minor because it is associated with the Protection Against External Factors 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, licensee personnel did not identify a number of fire doors that were not capable of closing and latching without assistance, which impacted the door’s ability to perform its design function. Using IMC 0609, Appendix F, Attachment 1, “Fire Protection Significance Determination Process Worksheet,” the inspectors determined that the finding category was “Fire Confinement,” and that the finding did not impact the ability of the plant to achieve safe shutdown. As a result, the finding screened as having very low safety

significance (Green). This finding had a cross-cutting aspect in the Procedure Adherence component of the Human Performance cross-cutting area because licensee personnel did not follow procedures, processes and work instructions. Specifically, the licensee did not have the fire door testing procedure in hand while performing the surveillance and did not follow the procedure steps (H.8). (Section 1R05.1b)

B. Licensee-Identified Violations

No violations were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power for the duration of the inspection period.

Unit 2 operated at or near full power for the duration of the inspection period with one exception. On February 1, 2014, reactor power was lowered to approximately 86 percent to perform main turbine valve testing. The reactor was returned to full power the following day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition – Extreme Cold Conditions

a. Inspection Scope

Since extreme cold conditions were forecast in the vicinity of the facility throughout the inspection period, the inspectors reviewed the licensee's overall preparations for the expected weather conditions. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures to ensure the availability of adequate personnel for safe plant operation and emergency response. In addition, on January 28, 2014, the inspectors walked down the LSH, lake intake structure, and associated systems to specifically identify if frazil icing conditions were occurring and to assess the station's readiness to mitigate such an event. Documents reviewed are listed in the Attachment.

This inspection constituted one readiness for impending adverse weather condition sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

(1) Inadequate Entry Criteria for Intake Frazil Icing Conditions

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of TS 5.4.1, "Procedures," when licensee personnel failed to establish and maintain an adequate procedure regarding a postulated frazil icing event at the LSH.

Description: Frazil ice is a phenomenon that has occurred at other nuclear facilities and has adversely affected safety. Frazil ice can adhere and build up on the intake trash bars and/or traveling screens in a manner that blocks cooling water flow and/or breaks equipment due to the excessive weight of the ice and differential pressure across systems and structures.

On January 28, 2014, with outside air temperature at approximately -10°F, the inspectors performed a system walkdown at the LSH and observed minor icing at the surface of the intake trash bars. The ice had bridged between the trash bars at the surface, but did not noticeably impact flow. This condition was immediately reported to Control Room supervisors.

The inspectors reviewed the licensee's AOP 0BwOA ENV-1, "Adverse Weather Conditions," entry criteria and compared that criteria to the manner in which Operations implemented the criteria. The AOP entry criteria listed in 0BwOA ENV-1, Revision 116, included the following:

- *Conditions exist for the formation of Frazil Ice*
 - *Lake temperature $\leq 32^{\circ}\text{F}$*
 - *Windy conditions, low air temperature, and clear skies*

Note: The open bullet format signified that the existence of either condition required implementation of the frazil ice mitigation actions described in the procedure.

The inspectors questioned why the licensee had not implemented 0BwOA ENV-1 based upon an outside air temperature of approximately -10°F, and the formation and bridging of ice at the surface of the LSH trash bars; a condition which would indicate a lake temperature of $\leq 32^{\circ}\text{F}$.

The inspectors determined that the licensee was not monitoring lake temperature directly, but instead relied upon either the water temperature at the inlet of the main condenser water box or the water temperature at the discharge of the essential service water pumps. Both of these temperatures were approximately 34°F during the inspectors' January 28, 2014 observation based on the installed instrumentation. The inspectors identified issues with both of these temperature parameters that could result in reaching the entry condition of "Lake temperature $\leq 32^{\circ}\text{F}$ " without Operations awareness of the required entry into the AOP. Specifically:

- Both temperature instruments contained an error uncertainty ranging from $\pm 1.6^{\circ}\text{F}$ to $\pm 2.6^{\circ}\text{F}$;
- The temperature instruments that measured the main condenser water box temperature were no longer being calibrated and therefore could not have been used to accurately determine AOP entry conditions; and
- The location where both instruments and associated process steams were measured was several hundred yards from the lake intake. Therefore, heat input from the holdup time in the warmer LSH, heat transferred during transport, and heat input from the essential service water pumps or circulating water (CW) pumps all would result in a higher temperature than the water temperature at the LSH trash bars.

In addition to lake temperature criteria, the inspectors identified that the second criteria of windy conditions, low air temperature, and clear skies represented a significant challenge to the licensee in establishing a clear and consistent expectation for entry.

For example, on January 23, 2014, the condition of approximately 21 miles per hour sustained winds, with an air temperature of -4°F and clear skies was not viewed as meeting the 0BwOA ENV-1 implementation criteria by the operating crew.

The licensee entered this issue into their CAP as IR 1613056, "NRC Identified Ice Forming at the LSH CW Trash Bars," and IR 1617385, "NRC Questions Regarding Frazil Ice." Corrective actions included revising the frazil ice entry criteria in 0BwOA ENV-1 based upon essential service water temperature with margin to account for instrument uncertainty and essential service water heat input.

Analysis: The inspectors determined that the failure to establish appropriate 0BwOA ENV-1, "Adverse Weather Conditions," frazil ice entry conditions was a performance deficiency.

The performance deficiency was screened in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to establish and maintain adequate entry criteria in 0BwOA ENV-1 could result in additional time for ice to accumulate on plant components before mitigating actions would be initiated. Any delay in mitigating this type of event could increase the likelihood of a loss or partial loss of essential service water event or other transient (e.g., loss of instrument air and reactor trip).

The inspectors evaluated this finding using the Significance Determination Process (SDP) in accordance with IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," which directed that a detailed risk evaluation be performed. This evaluation was performed by an NRC Regional SRA.

The SRA estimated the frequency of a frazil ice condition based on input from the inspectors that the site had never experienced a frazil ice event in 26 years of operation. Given this history, the SRA estimated the probability of frazil ice formation using a Bayesian technique and obtained a value of 1.85E-02. In addition, the SRA increased the likelihood of a dual unit loss of essential service water event given the occurrence of frazil ice formation in the Braidwood ultimate heat sink. The SRA estimated this value to be 2.19E-03/year, which was chosen to be an order of magnitude higher than the nominal value for the dual unit loss of essential service water event obtained from the Braidwood Standardized Plant Analysis Risk (SPAR) model. Increasing the likelihood of the loss of service water event for this issue by an order of magnitude was considered an appropriate estimate based on reliability models and generic data.

The SRA used the Braidwood SPAR model version 8.24, and Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) version 8.0.9 software to obtain the conditional probability of core damage given the loss of all service water at the site. This value was 5.72E-03. Using the above information, the delta core damage frequency (Δ CDF) was calculated to be 2.3E-07/year. The dominant sequence involved a frazil ice/dual unit loss of essential service water initiating event with a failure of auxiliary and main feedwater and a failure to recover essential service water.

Since the total estimated change in core damage frequency was greater than 1.0E-07/year, IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," was used to determine the potential risk contribution due to Large Early Release Frequency (LERF). Braidwood Station is a 4-loop Westinghouse Pressurized Water Reactor (PWR) with a large dry containment. Sequences important to LERF included steam generator tube rupture events and inter-system loss-of-coolant-accident (LOCA) events. These were not the dominant core damage sequences for this finding. Therefore, based on the detailed risk evaluation, the inspectors determined that the finding was of very low safety significance (Green).

This finding did not have an associated cross-cutting aspect because the inspectors determined that the most significant cause of the error was when the entry criteria was established in November 2010, and was therefore not indicative of current performance.

Enforcement: Technical Specification 5.4.1, "Procedures," requires, in part, that written procedures shall be established, implemented and maintained covering the following activities...[T]he applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978.

Regulatory Guide 1.33, Revision 2, Section 6, included procedures for combating emergencies and other significant events, including acts of nature. Braidwood procedure 0BwOA ENV-1, "Adverse Weather Conditions," Revision 116 was a procedure included under Regulatory Guide 1.33, Revision 2, Section 6, since frazil ice at the LSH could be a significant event, which is an act of nature, and included the following criteria for when this procedure should be entered during frazil ice conditions:

- Lake Temperature $\leq 32^{\circ}\text{F}$
- Windy conditions, low air temperature, and clear skies

Contrary to the above, on November 1, 2010, 0BwOA ENV-1, "Adverse Weather Conditions," Revision 109, failed to include adequate entry criteria after the station incorporated lessons learned from other facility operating experience. Specifically, the licensee's revised 0BwOA ENV-1, "Adverse Weather Conditions," incorporated lessons learned from operating experience within the industry, but failed to account for the necessary margin and data available to Operations.

Because this violation was of very low safety significance and because the issue was entered into the licensee's CAP as IR 1613056, "NRC Identified Ice Forming at the LSH CW Trash Bars," and IR 1617385, "NRC Questions Regarding Frazil Ice," this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000456/2014002-01; 05000457/2014002-01, Inadequate AOP Entry Criteria for Intake Frazil Icing Conditions)**

(2) Failure to Ensure Mitigating System Availability and Reliability During Weather Conditions That Could Promote Frazil Ice at the LSH

Introduction: The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to ensure that a system was available to mitigate a frazil icing event in accordance with station standards.

Description: The inspectors reviewed the licensee AOPs used to mitigate a frazil icing event at the LSH and associated intake. The licensee specified one system (i.e. the trash rake) to remove ice buildup on the intake bar racks. Specifically, 0BWOA ENV-1, "Adverse Weather Conditions," Revision 116, Attachment A, "Actions for Frazil Ice," directed the following action in the event of ice buildup on the intake bar racks:

- *Utilize Trash Rake to remove ice buildup on Bar Racks*

On January 28, 2014, the inspectors performed a walk down of the lake intake and identified that a thin layer of ice had bridged the trash bars at the surface. The inspectors notified the Unit 2 Control Room Unit Supervisor of this condition. Following this observation, Operations attempted to run the trash rake to clear the ice, but were unsuccessful because the trash rake system failed to move east and west along the intake rail system. Although the trash rake system did not function properly, the minor icing condition observed by the inspectors did not adversely impact plant operations or plant safety since intake water flow was not significantly impeded.

The licensee placed a high station priority on repairing the trash rake in accordance with station work processes. Work Order (WO) 01707706, "Lake Traveling Rake Will Not Traverse on Rails," that was generated by the licensee to repair the trash rake included three tasks. The first task was to electrically troubleshoot and repair the trash rake. Through this task, the licensee determined that the trash rake had failed due to a frozen motor bearing. The licensee addressed this issue by using a heating device outside the bearing housing to free the shaft and then demonstrated that the system worked by running the motor. The second task was to mechanically troubleshoot and repair the trash rake system, and the third task was to perform a post-maintenance test. Both the second and third WO tasks were cancelled based upon the success in completing the first task assignment. On January 30, 2014, the trash rake was restored to Operations for use as functional equipment.

On February 5, 2014, the inspectors questioned the licensee's corrective action of utilizing a heating device to free the motor bearing. Specifically, if the bearing was frozen due to the extremely cold temperatures as the inspectors were informed from multiple station personnel, management, and as documented in WO 01707706, then it seemed that a return of those temperatures could re-introduce the problem. Outside air temperatures had consistently been very low following the licensee's corrective action with the coldest temperature reaching -15°F on February 3, 2014. Following this discussion, the licensee attempted to operate the trash rake system and discovered that the trash rake system would again not move east to west.

The inspectors reviewed the actions the licensee had taken through their seasonal readiness processes, preventative maintenance programs, and guidance documents to determine if the licensee had missed any prior opportunities to ensure that the trash rake system would be available if needed to mitigate a frazil icing event. Additionally, the inspectors reviewed the licensee's work screening and corrective maintenance processes to determine if the corrective actions taken by the licensee in response to the January 28, 2014, trash rake equipment failure were adequate. The inspectors identified missed opportunities to both proactively (Issue 1) and reactively (Issue 2) ensure that a reliable and capable trash rake system would be available during conditions that could lead to frazil icing at the intake.

Issue 1 - Proactive Standards Not Met to Ensure Trash Rake Availability

- The licensee had classified the trash rake system as a “non-critical” component. The licensee’s “non-critical” equipment classification was discussed in the licensee’s Preventative Maintenance Program, ER-AA-200, “Preventative Maintenance Program,” Revision 0. This program specified that the equipment classification of “non-critical” did not mean that the system was run-to-failure. However, the classification recognized that a limited number of failures may be tolerated.
- The licensee operated the trash rake in November 2013 as part of their winter readiness preparations. Therefore, the inspectors did not identify any deficiencies with the licensee’s implementation of this standard. However, this standard did not ensure that the system would remain functional during subsequent months and potentially dramatically different weather conditions.
- The licensee had established guidelines that provided both requirements and recommendations for actions to be taken in the event that the site was or was expected to be impacted by acts of nature. Specifically, Procedure OP-AA-108-111-1001, “Severe Weather and Natural Disaster Guidelines,” Revision 12, contained preparatory standards when weather conditions that promoted frazil ice production was predicted or occurring. The inspectors determined that the station had not considered these guidelines, and therefore failed to meet this standard. In particular:
 - Section 2.4 of the procedure defined the term frazil ice and discussed the weather conditions for frazil ice as low air temperature (-6°C), (21.2°F), and most often clear nights.
 - Section 4.6.5 of the procedure contained a number of considerations including a verification that the trash rake system was operational.

The inspectors determined that Operations had not considered this guideline and recommendation when these adverse weather conditions occurred.

Issue 2 - Reactive Corrective Actions Were Not Effective

The inspectors reviewed the licensee’s procedure and expectations for performing corrective maintenance on nonsafety-related equipment prior to returning the equipment to Operations as functional. Specifically, WO 1707706, Task 1 was coded as a ‘CN’ task. Licensee procedure WC-AA-106, “Work Screening and Processing,” Revision 13, defined this task as corrective maintenance performed on ‘non-critical’ classified components. The licensee’s expectation was that corrective maintenance would correct this issue. The inspectors determined that the licensee’s troubleshooting and corrective maintenance that consisted in large part of applying heat to the outer bearing was not effective at ensuring that the equipment was functional upon completion of the work activity.

Following the second failure on February 5, 2014, the licensee utilized vendor support to re-furbish the system to ensure future reliability. This activity was completed under a separate WO. A summary report from the vendor identified that: “1) the opposite drive end of the motor was found to be in terrible condition; 2) the motor cooling fan was broken; 3) the motor shaft was extremely rust and pitted, and the brake hub was stuck to

the shaft; and 4) the opposite drive end bearing housing was found to be loose and oversized and consistent with a bearing that had been spinning in the housing and was in the process of failing.”

The licensee entered this issue into their CAP as IR 1613767, “LSH Trash Rake Will Not Traverse on Rails.” In addition to repairing the trash rake system, the licensee created an additional method to clear ice from the trash bars by utilizing high pressure air and by directing the use of the warm water from plant discharges.

Analysis: The inspectors determined that the failure to ensure that the trash rake system was available to mitigate a frazil icing event at the LSH was a performance deficiency.

The performance deficiency was screened in accordance with IMC 0612, Appendix B, “Issue Screening.” The inspectors determined that the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to have any mitigating systems available during weather conditions that could promote frazil icing of the lake intake increased the likelihood of a plant transient, including a loss of essential service water event.

The inspectors evaluated this finding using the SDP in accordance with IMC 0609, Attachment 4, “Initial Characterization of Findings,” and IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” which directed that a detailed risk evaluation be performed. This evaluation was performed by an NRC Regional SRA.

The SRA estimated the frequency of a frazil ice condition based on input from the inspectors that the site had never experienced a frazil ice event in its 26 years of operation. Given this history, the SRA estimated the probability of frazil ice formation using a Bayesian technique and obtained a value of 1.85E-02. In addition, the SRA increased the likelihood of a dual unit loss of essential service water event given the occurrence of frazil ice formation in the Braidwood ultimate heat sink. The SRA estimated this value to be 2.19E-03/year, which was chosen to be an order of magnitude higher than the nominal value for the dual unit loss of essential service water event obtained from the Braidwood SPAR model. Increasing the likelihood of the loss of service water event for this issue by an order of magnitude was considered an appropriate estimate based on reliability models and generic data.

The SRA used the Braidwood SPAR model version 8.24 and SAPHIRE version 8.0.9 software to obtain the conditional probability of core damage given the loss of all service water at the site. This value was 5.72E-03. Using the above information, the Δ CDF was calculated to be 2.3E-07/year. The dominant sequence involved a frazil ice/dual unit loss of essential service water initiating event with a failure of auxiliary and main feedwater and a failure to recover essential service water.

Since the total estimated change in core damage frequency was greater than 1.0E-07/year, IMC 0609, Appendix H, “Containment Integrity Significance Determination Process,” was used to determine the potential risk contribution due to LERF. Braidwood Station is a 4-loop Westinghouse PWR with a large dry containment. Sequences important to LERF include steam generator tube rupture events and inter-system LOCA

events. These were not the dominant core damage sequences for this finding. Therefore, based on the detailed risk evaluation, the inspectors determined that the finding was of very low safety significance (Green).

This finding had a cross-cutting aspect in the Resolution component of the Problem Identification and Resolution cross-cutting area because the organization failed to take effective corrective action to address a non-functioning LSH trash rake in a timely manner commensurate with safety after restoring the equipment to Operations as functional equipment for use during weather conditions that could promote frazil icing conditions (P.3).

Enforcement: No violations of regulatory requirements occurred. Specifically, the trash rake system is not a safety-related system or component and is not scoped in the 10 CFR 50.65 Maintenance Rule. Because the issue did not involve a violation and was of very low safety significance, it is identified as a Finding (FIN). **(FIN 05000456/2014002, Failure to Ensure Mitigating System Availability and Reliability During Weather Conditions that Could Promote Frazil Ice at the LSH)**

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- 2B Diesel Generator Room Prior to Taking 2A Diesel Generator Out-of-Service for Maintenance;
- 1B Emergency Diesel Generator During 1A Emergency Diesel Generator Work Window;
- 1B Auxiliary Feedwater Pump During 1A Auxiliary Feedwater Pump Surveillance Testing; and
- 2A Auxiliary Feedwater Pump During 2B Auxiliary Feedwater Pump Surveillance Testing.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and therefore potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), TS requirements, outstanding WOs, IRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These activities constituted four partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown (71111.04S)

a. Inspection Scope

On March 26, 2014, the inspectors performed a complete system alignment inspection of the Unit 2 Component Cooling Water system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications; component labeling; component lubrication; component and equipment cooling; hangers and supports; the operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on the availability, accessibility, and condition of firefighting equipment in the following risk-significant plant areas:

- 1B Diesel Generator Room;
- Lake Screen House including Diesel-Driven Fire Pump Enclosure;
- Fueling Handling Building;
- Unit 1 Miscellaneous Electrical Equipment and 125 Volt Direct Current (Vdc) Rooms;
- Unit 2 Miscellaneous Electrical Equipment and 125 Vdc Rooms; and
- 1B Auxiliary Feedwater Pump Room.

The inspectors reviewed these areas and determined whether the licensee had implemented a fire protection program that adequately controlled combustibles and

ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

These activities constituted six quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

Failure to Identify Fire Doors That Do Not Conform to the Current Licensing Basis National Fire Protection Association Codes and Standards

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of Braidwood Operating License Condition 2.E, "Fire Protection Program," when licensee personnel failed to identify fire doors that did not conform to the current licensing basis standard within the National Fire Protection Agency (NFPA)-80 Code that required fire doors to automatically shut and latch without assistance.

Description: In January 2014, during a routine plant walkdown, the inspectors identified that fire door D-383, which served as a fire barrier between Braidwood's auxiliary building and fuel handling building, would not automatically close and latch after use. The inspectors noted that due to the high pressure difference across the door, the door required significant assistance to close and latch. The inspectors discussed the issue with licensee personnel. This issue was entered into the licensee's CAP as IR 1607613, "IEMA [Illinois Emergency Management Agency] Question on D-383." The inspector reviewed the IR after it had been processed and identified that the licensee incorrectly concluded that since the door could be closed and secured in the closed position with some assistance, it met its design function and no additional actions were necessary.

The inspectors reviewed station procedure 0BwOS FP.7.2.D-1, "Unlocked Fire Door Daily Surveillance." This procedure provided the method to be used to verify, on a daily basis, that unlocked fire doors operated freely, closed, and latched without assistance. This procedure specified that fire doors that were able to be closed and latched were functional, while doors that needed assistance to be closed and latched were degraded, but functional. The inspectors also noted that the NFPA-80 Code, which the station was committed to through their Fire Protection Program, stated that door openings in fire barriers should be protected with equivalently rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be self-closing or provided with closing mechanisms and should be inspected semi-annually to verify that automatic hold-open, release, and closing mechanisms and

latches were operable. Additionally, the inspectors reviewed a historic engineering evaluation that had reviewed this topic based upon prior NRC questions and had determined that fire doors that did not automatically close and latch needed to be corrected to restore compliance.

0BwOS FP.7.2.D-1, "Unlocked Fire Door Daily Surveillance," included a step to initiate an IR for any fire door that did not automatically close and latch or that binded in the door frame when closing. Specifically, Section F, Step 2.b.6, of 0BwOS FP.7.2.D-1 included the following:

- *INITIATE an Issue Report (IR) for any Fire Door that does not auto close and latch or binds in door frame when closing*

The inspectors conducted a search within the CAP to determine if the licensee had initiated an IR, as required, for any of the daily tests that would have likely failed based upon the inspectors field observations. The inspectors did not identify any associated IRs. The inspectors discussed this issue with the licensee and requirements contained within their current licensing basis and historical licensing evaluations. As a result of the inspectors questions, the licensee reviewed the matter further.

After the licensee completed their review, they identified that station personnel had inadequately incorporated the requirements of 0BwOS FP.7.2.D-1 into the Personal Digital Assistants (PDAs) utilized by operators during shift rounds activities. Specifically, the licensee had not incorporated the entire procedure into the PDAs, but rather simply included a list of all fire doors that were required to be tested. Operators assumed that if the fire door could be shut and latched with assistance, that the door was functional, conformed to station standards, and therefore no IR was required to be generated.

Since the unlocked fire door daily surveillance was a "Continuous Use" procedure, in accordance with HU-AA-104-101, "Procedure Use and Adherence," the person completing 0BwOS FP.7.2.D-1 was required to read each step of the procedure prior to performing that step, and was required to place-keep each step as complete before proceeding with the next step. The licensee readily recognized this deficiency after completing their review and discussions with the inspectors.

When the licensee started performing the daily surveillance correctly, with the procedure in hand, 12 additional fire doors were identified as degraded. The licensee generated IRs to identify these doors as degraded and placed signs on the doors to alert personnel going through the door that the door was degraded and directed personnel using the door to ensure that it was shut following use. The licensee also performed an extent of condition review to identify if any other Operations procedures were impacted by the incorrect translation of information to the equipment operators' PDA.

The licensee entered this issue into their CAP as IR 1629689, "Unclear Direction in 0BwOS FP.7.2.D-1." Corrective actions included training the plant operators on the expectations regarding generation of IRs for any abnormal condition in the plant, and requiring the use of a copy of the surveillance procedure in the field while completing the daily fire door surveillance.

This finding had a cross-cutting aspect in the Procedure Adherence component of the Human Performance cross-cutting area because licensee personnel did not follow procedures, processes, and work instructions. Specifically, the licensee did not have the

fire door testing procedure in hand while performing the surveillance and did not follow the procedure steps (H.8).

Analysis: The inspectors determined that the licensee's failure to identify and correct plant fire doors that were not in compliance with the NFPA codes and standards and associated current licensing basis was a performance deficiency.

The performance deficiency was screened in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency was more than minor because it was associated with the Protection Against External Factors 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, licensee personnel did not identify a number of fire doors that were not capable of closing and latching without assistance which impacted the door's ability to perform its design function. The inspectors concluded that since the condition represented a finding involving the ability to confine a fire, IMC 0609, Appendix F, "Fire Protection Significance Determination Process," should be used. Using Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding category was "Fire Confinement," and that the finding did not impact the ability of the plant to achieve safe shutdown. As a result, the finding screened as having very low safety significance (Green).

Enforcement: Braidwood Operating License Condition 2.E states, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR, as supplemented and amended. Braidwood's Fire Protection Program stated, in part, that the Fire Protection Program was implemented through station administrative procedures, which specifically addressed all aspects of the Fire Protection Program. Licensee procedure 0BwOS FP.7.2.D-1, "Unlocked Fire Door Daily Surveillance," included steps to be used to verify, on a daily basis, that unlocked fire doors operate freely, close, and latch without assistance. Procedure 0BwOS FP.7.2.D-1 instructed the licensee, in part, to initiate an IR for any fire door that did not automatically close and latch or bind in the door frame when closing.

Contrary to the above, between January 10, 2014, and March 24, 2014, the licensee did not initiate IRs when a degraded fire door condition existed and should have been identified during the daily fire door surveillance test. Specifically, unlocked fire doors were not tested in accordance with 0BwOS FP.7.2.D-1 and, as a result, IRs were not generated when degraded fire doors existed.

Licensee corrective actions included training the plant operators on the expectations regarding generation of IRs for any abnormal condition in the plant, and requiring the use of a copy of the surveillance procedure in the field while completing the daily fire door surveillance.

Because this issue was of very low safety significance and because the issue was entered into the licensee's CAP as IR 1629689, "Unclear Direction in 0BwOS FP.7.2.D-1," this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000456/2014002-03; 05000457/2014002-03, Failure to Identify Fire Doors that Did Not Conform to NFPA Codes and Standards**).

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures, to identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the CW systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 2 Essential Service Water System Work Window with Single Valve Isolation from the Lake.

Documents reviewed are listed in the Attachment. This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On March 11, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during Cycle 14-2 licensed operator regualification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- the crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- the crew's ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment.

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On March 28, 2014, the inspectors reviewed operator response following entry into Limiting Condition for Operation 3.1.7 after the licensee identified that Unit 1 control rod H2 indication was changing from 204 to 228 steps with no actual control rod movement. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- the ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board and equipment manipulations;
- oversight and direction from supervisors; and
- crew's ability to identify and implement appropriate TS actions.

The crew's performance in these areas was compared to pre-established operator action expectations, procedural compliance, and critical task completion requirements. Documents reviewed are listed in the Attachment.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant system:

- Maintenance of Hose for Containment Spray Additive Flow Test.

The inspectors reviewed events including those in which ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the Maintenance Rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for Structures, Systems, and Components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

This inspection constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- 1AF017A Failure to Stroke;
- 2B Residual Heat Planned Maintenance Window;
- Unit 2 Main Feedwater Card Replacement – Operability Risk;
- 2A Essential Service Water Work Window During 1A Emergency Diesel Generator Nonsafety-Related Equipment Issue;
- Unit 1 and Unit 2 Yellow Risk Due to Unit 2 Safety Injection and Fuel Pool Cooling Work Window; and
- Unit 1 Yellow Risk Due to 1B Essential Service Water Train American Society of Mechanical Engineers (ASME) Run.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Documents reviewed are listed in the Attachment.

These maintenance risk assessments and emergent work control activities constituted six samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Potential Voiding in Unit 2 Auxiliary Feedwater Suction;
- 2B Solid State Protection System Unexpected Light Indication;
- Manual Main Steam Line Isolation – Non-Conformance;
- Fuel Nozzle Spring Non-Conforming Material; and
- Emergency Diesel Generator Fuel Oil Pump Bearing Issue.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

This operability inspection constituted five samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- Steam Generator Blowdown Temporary Configuration Change.

The inspectors reviewed the configuration change and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TSs, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modification was installed as directed and consistent with the design control documents; the modification operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modification did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment.

This inspection constituted one plant modification samples as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance testing activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- 2B Essential Service Water Pump Post-Maintenance Testing Following Seal Replacement;
- 1AF017A Following Torque Switch Adjustment;
- 1B Emergency Diesel Generator Post-Maintenance Testing Following Pressure Switch Replacement;
- 1A Emergency Diesel Generator Post-Maintenance Testing Following Nonsafety-Related Solenoid Replacement; and

- 1A Containment Spray Post-Maintenance Testing Following Valve and Room Cooler Maintenance.

These activities were selected based upon the SSC's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): whether the effect of testing on the plant had been adequately addressed; whether testing was adequate for the maintenance performed; whether acceptance criteria were clear and demonstrated operational readiness; whether test instrumentation was appropriate; whether tests were performed as written in accordance with properly reviewed and approved procedures; whether equipment was returned to its operational status following testing (e.g., temporary modifications or jumpers required for test performance were properly removed after test completion); and whether test documentation was properly evaluated.

The inspectors evaluated these activities against TSS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately determined that the equipment met the licensing bases and design requirements.

In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in their CAP at the appropriate threshold and that the problems were corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

This inspection constituted five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Activities

a. Inspection Scope

During this inspection period, the inspectors observed new fuel receipt inspections prior to Unit 2 refueling outage 2AR17. The inspectors determined whether the licensee performed these inspections in accordance with their procedures and whether any issues were appropriately dispositioned.

This inspection did not constitute an outage sample as defined in IP 71111.20-05, but will be a part of the Unit 2 refueling outage sample planned for next quarter.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- 1B Emergency Diesel Generator Monthly Run (Routine);
- 2A Emergency Diesel Generator Monthly Run (Routine);
- 2A Safety Injection Pump Suction Valve Diagnostic Testing (Routine);
- 1A Emergency Diesel Generator Run (Routine);
- 2B Containment Spray Pump ASME Quarterly Test (IST).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, sufficient to demonstrate operational readiness, and consistent with the system design basis;
- was plant equipment calibration correct, accurate, and properly documented;
- were as left setpoints within required ranges; and was the calibration frequency in accordance with TSs, the UFSAR, plant procedures, and applicable commitments;
- was measuring and test equipment calibration current;
- was the test equipment used within the required range and accuracy and were applicable prerequisites described in the test procedures satisfied;
- did test frequencies meet TS requirements to demonstrate operability and reliability;
- were tests performed in accordance with the test procedures and other applicable procedures;
- were jumpers and lifted leads controlled and restored where used;
- were test data and results accurate, complete, within limits, and valid;
- was test equipment removed following testing;
- where applicable for IST activities, was testing performed in accordance with the applicable version of Section XI of the ASME Code, and were reference values consistent with the system design basis;
- was the unavailability of the tested equipment appropriately considered in the performance indicator data;
- where applicable, were test results not meeting acceptance criteria addressed with an adequate operability evaluation, or was the system or component declared inoperable;
- where applicable for safety-related instrument control surveillance tests, was the reference setting data accurately incorporated into the test procedure;

- was equipment returned to a position or status required to support the performance of its safety function following testing;
- were all problems identified during the testing appropriately documented and dispositioned in the licensee's CAP;
- where applicable, were annunciators and other alarms demonstrated to be functional and were annunciator and alarm setpoints consistent with design documents; and
- where applicable, were alarm response procedure entry points and actions consistent with the plant design and licensing documents.

Documents reviewed are listed in the Attachment.

This inspection constituted four routine surveillance testing samples and one IST sample, as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This inspection constituted one complete sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. The instrumentation reviewed included continuous air monitors and particulate-iodine noble gas type instruments used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the Respiratory Protection Program and a description of the types of devices used. The inspectors reviewed the UFSAR, TSs, and emergency planning documents to identify the location and quantity of respiratory protection devices stored for emergency use.

The inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus as well as procedures for air quality maintenance.

The inspectors reviewed any reported performance indicators related to unintended dose resulting from the intake of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee used ventilation systems as part of its engineering controls (in lieu of respiratory protection devices) to control airborne radioactivity. The inspectors reviewed procedural guidance for the use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation, and assessed whether the systems were used, to the extent practicable, during high-risk activities (e.g., containment purge during cavity floodup).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (i.e., high efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems was consistent with licensee procedural guidance and the as-low-as-reasonably-achievable (ALARA) concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluated whether the alarms and setpoints were sufficient to prompt licensee/worker action to ensure that doses were maintained within the limits of 10 CFR Part 20 and the ALARA concept.

The inspectors assessed whether the licensee established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it was impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses were ALARA. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators was ALARA. The inspectors also evaluated whether the licensee established means (such as routine bioassay) to determine if the level of protection (e.g., protection

factor) provided by the respiratory protection devices during use was at least as effective as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or had been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices satisfied or exceeded Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they met the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices and assessed whether they had been determined to be fit to use the devices by a physician.

The inspectors selected several individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (e.g., loss of power, loss of air, etc.).

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance. The inspectors assessed the physical condition of the device components (e.g., mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors reviewed the Respirator Vital Components Maintenance Program to ensure that the repairs of vital components were performed by the respirator manufacturer contractors.

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the UFSAR, TSS, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle change out). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type matched what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrective lenses) were available as appropriate.

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as “ready for service” to assess whether any maintenance or repairs on any self-contained breathing apparatus unit’s vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically were the pressure-demand air regulator and the low pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine if there were any inconsistencies with the self-contained breathing apparatus manufacturer’s recommended practices. For those self-contained breathing apparatuses designated as “ready for service,” the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up-to-date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee’s CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted one complete sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of Radiation Protection Program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the National Voluntary Laboratory Accreditation Program accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee's procedures associated with dosimetry operations, including issuance/use of external dosimetry (e.g., routine, multi-badging, extremity, neutron, etc.), assessment of internal dose (e.g., operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and evaluation of and dose assessment for radiological incidents (e.g., distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee established procedural requirements for determining when external and internal dosimetry was required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor was National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test categories for each type of personnel dosimeter used were consistent with the types and energies of the radiation present and the manner in which the dosimeter was being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to radiation workers with respect to the care and storage of dosimeters.

The inspectors assessed whether non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters (e.g., direct ion storage sight read dosimeters) were used according to the licensee's procedures that provided for periodic calibration, application of calibration factors, usage, reading (dose assessment), and zeroing.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee used a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when

the electronic personal dosimeter must be used to assign dose. The inspectors also assessed whether the correction factor was based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports and CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake, and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors, as a passive monitoring system, to determine if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspectors reviewed the licensee's 10 CFR Part 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounted for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

c. Inspection Scope

There were no internal dose assessments obtained using in vitro monitoring for the inspectors to review. The inspectors reviewed and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (i.e., tritium, fission products, and activation products), including collection, storage of samples, and shipping to vendor.

The inspectors reviewed the vendor laboratory Quality Assurance Program and assessed whether the laboratory participated in an industry recognized Cross-Check Program including whether out-of-tolerance results were resolved appropriately.

d. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

e. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used.

f. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

g. Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

h. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informed workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for voluntarily declaring a pregnancy.

The inspectors selected individuals who had declared pregnancy during the current assessment period and evaluated whether the licensee's Radiological Monitoring Program (internal and external) for declared pregnant workers was technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

.5 Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients existed. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with the licensee's procedures and dosimetric standards.

b. Findings

No findings were identified.

.6 Shallow Dose Equivalent

a. Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

b. Findings

No findings were identified.

.7 Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's Neutron Dosimetry Program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether:

- dosimetry and/or instrumentation was appropriate for the expected neutron spectra;
- there was sufficient sensitivity for low dose and/or dose rate measurement; and
- neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

.8 Assigning Dose of Record

a. Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigned dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Mitigating Systems, and Occupational and Public Radiation Safety

40A1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures Performance Indicator (PI) for Braidwood Unit 1 and Unit 2 for the period from the second quarter 2013 through the fourth quarter 2014. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, Maintenance Rule records, maintenance WOs, IRs, event reports and NRC Integrated Inspection Reports for the period of April 2013 through December 2014, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment

This inspection constituted two safety system functional failures samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Exposure Control Effectiveness PI for the period from the first quarter 2013 through the first quarter 2014. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if the indicator-related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment.

This inspection constituted one occupational exposure control effectiveness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included whether identification of the problem was complete and accurate; whether timeliness was commensurate with the safety significance of the issue; whether the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrence reviews were proper and adequate; and whether the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily CAP Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily IR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000456/2013-002-00, Liquid Penetration Indications in Embedded Flaw Repair of Control Rod Drive Mechanism Penetration 69 During Refueling Outage

The inspectors reviewed LER 05000456/2013-002-00, which was submitted on November 13, 2013. On September 14, 2013, indications exceeding ASME Section III acceptance criteria were discovered in the embedded flaw repair weld of Control Rod Drive Mechanism Penetration 69.

This LER was reviewed. No additional findings or violations of NRC requirements were identified. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

4OA5 Other Activities

.1 (Closed) Unresolved Item (URI) 05000456/2012003-05; 05000456/2012003-05, Licensee's Position Regarding TS 3.6.3 Applicability to Main Steam Isolation Valves

As discussed in NRC Inspection Report 05000456/2012003; 05000456/2012003; the inspectors questioned whether it was appropriate for the licensee to not enter TS 3.6.3, "Containment Isolation Valve," upon discovery of an open main steam isolation valve, main steam bypass valve, or main feedwater isolation valve not capable of being shut in any of the applicable modes.

The NRC utilized the Task Interface Agreement (TIA) 'letter method' process to resolve this question. This TIA is publically available in ADAMS (Reference TIA: ML14069A337, "Final Response to Task Interface Agreement 2012-13, Braidwood Station TS 3.6.3 Compliance with One or More Main Steam Isolation Valves Inoperable.")

In summary, the NRC concluded that the licensee is not required to enter TS 3.6.3 for an open and non-functional main steam isolation valve, but is required to enter TS 3.6.3 for an open and non-functional main steam bypass valve or main feedwater isolation valve.

This URI is closed

.2 (Closed) URI 05000456/2013002-07; 05000457/2013002-07, Current Licensing Basis Requirements for the Unit 1 and Unit 2 Containment Sump Isolation Valves

As discussed in NRC Inspection Report 05000456/2013002; 05000457/2013002, the inspectors had not completed their review of the containment isolation valve enclosure testing requirements following installation of inspection ports.

The inspectors completed their reviews and did not identify any findings or violations associated with this URI.

This URI is closed.

.3 New Cross-Cutting Aspects

The table below provides a cross-reference from the third and fourth quarter 2013 findings and associated cross-cutting aspects to the new cross-cutting aspects resulting from the common language initiative. These aspects and any others identified since January 2014 will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review.

Finding	Old Cross-Cutting Aspect	New Cross-Cutting Aspect
05000456/2013005-02; 05000457/2013005-02	H.4(a)	H.11

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 10, 2014, the inspectors presented the inspection results to Ms. M. Marchionda, Braidwood Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that proprietary material received during the inspection period that is no longer under review was returned to the licensee and none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The inspection results for the areas of in-plant airborne radioactivity control and mitigation, occupational dose assessment, and occupational exposure control effectiveness performance indicator verification with Ms. Amy Ferko, Operations Director, on March 20, 2014.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Kanavos, Site Vice President
M. Marchionda, Plant Manager
J. Bashor, Engineering Director
P. Boyle, Work Management Director
A. Ferko, Operations Manager
B. Finlay, Security Manager
R. Leisure, Radiation Protection Manager
R. Radulovich, Nuclear Oversight Manager
P. Raush, Regulatory Assurance Manager
B. Spahr, Maintenance Director
M. Wolf, Radiation Protection

Nuclear Regulatory Commission

E. Duncan, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000456/2014002-01; 05000456/2014002-01	NCV	Inadequate AOP Entry Criteria for Intake Frazil Icing Conditions (Section 1R01.1b)
05000456/2014002-02; 05000457/2014002-02	FIN	Failure to Ensure Mitigating System Availability and Reliability During Weather Conditions that Could Promote Frazil Ice at the LSH (Section 1R01.2)
05000456/2014002-03; 05000456/2014002-03	NCV	Failure to Identify Fire Doors that Did Not Conform to NFPA Codes and Standards (Section 1R05.1b)

Closed

05000456/2013002-00	LER	Liquid Penetration Indications in Embedded Flaw Repair of Control Rod Drive Mechanism Penetration 69 During Refueling Outage (Section 4OA3.1)
05000456/2012003-05; 05000456/2012003-05	URI	Licensee's Position Regarding TS 3.6.3 Applicability to Main Steam Isolation Valves (Section 4OA5.1)
05000456/2013002-07; 05000457/2013002-07	URI	Current Licensing Basis Requirements for the Unit 1 and Unit 2 Containment Sump Isolation Valves (Section 4OA5.2)

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather Protection

- IR 1613056; NRC Identified Ice Forming at the LSH CW Trash Bars; January 28, 2014
- IR 1613767; LSH Trash Rake Will Not Traverse on Rails; January 28, 2014
- IR 1614075; Gap to Excellence in the Initiation of an IR; January 28, 2014
- IR 1617327; Trash Rake Will Not Move East to West; February 5, 2014
- IR 1630805; Issue Regarding 0BwOA ENV-4, Step 4; March 8, 2014
- IR 1617385; NRC Questions Regarding Frazil Ice; February 4, 2014
- 0BwOA ENV-1; Adverse Weather Conditions; Revision 116
- BPO XVT-1; Cold Weather Operations; Revision 6
- 0BwOS XFT-A5; Freezing Temperature Equipment Protection Out Building Surveillance; Revision 20
- PM 185941; Frazil Ice Winter Readiness Preparations Annual Surveillance – River Screen House and Lake Screen House
- IT-CW022; Calibration of Condenser Inlet Line A Temperature; Revision 000
- IT-CW023; Calibration of Condenser Inlet Line B Temperature; Revision 000
- IT-CW024; Calibration of Condenser Inlet Line C Temperature; Revision 000
- IT-CW025; Calibration of Condenser Inlet Line D Temperature; Revision 000
- 2T-CW022; Calibration of Condenser Inlet Line A Temperature; Revision 001
- 2T-CW023; Calibration of Condenser Inlet Line B Temperature; Revision 001
- 2T-CW024; Calibration of Condenser Inlet Line C Temperature; Revision 001
- Information Notice 96-36; Degradation of Cooling Water Systems Due to Icing; June 12, 1996
- Information Notice 98-02; Nuclear Power Plant Cold Weather Problems and Protective Measures; January 21, 1998
- WO 01597480; Frazil Ice Winter Readiness Annual; November 5, 2013
- WO 01709949; Change Oil in Transversing Drive Gear Reducer; February 7, 2014
- WO 01709949 02; Fine 0CW05F Troubleshoot/Repair LSH Trash Rake; February 7, 2014
- WO 01712371 02; 2P-CB014 NPSH Loop Voltage Measurements with Card Replacements
- Cold Regions Technical Digest No. 91-1; Frazil Ice Blockage of Intake Trash Racks; March 1991
- Point Beach Unit 1 Manual Trip Due to Decreasing Fore Bay Level; January 21, 2000

1R04 Partial Equipment Alignment

- BwOP CC-E2; Electrical Lineup – Unit 2 Operating; Revision 4
- BwOP CC-M2; Operating Mechanical Lineup – Unit 2; Revision 16
- BwOP CC-10; Alignment of the “0” CC Pump to A Unit; Revision 28
- BwOP DG-1; Diesel Generator Alignment to Standby Condition, Revision 29
- BwOP DGE4; Electrical Lineup Unit 2 2B Diesel Generator
- Diagram M-139; Component Cooling – Unit 2; Sheets 1 & 2

1R05 Fire Protection

- IR 1135777; 2002 Corp EC May Not Have Met Intent of NFPA 80; November 3, 2010
- IR 1604975; Fire Door D-112 is Not Latching on its Own; January 7, 2014
- IR 1607613; IEMA Question on D-383; January 10, 2014
- IR 1610145; Door D-428 Door Handle Requires Maintenance; January 20, 2014
- IR 1629465; 1A DG Failed to Start – 1DG01KA; March 5, 2014
- IR 1627800; NRC Questions on Fire Door D-383; February 28, 2014
- IR 1629689; Unclear Direction in 0BwOS FP7.2.D-1; March 5, 2014
- IR 1630918; 0BwOS FP-10 Failed Acceptance Criteria; March 9, 2014
- IR 1632011; Door 383 to 426 FHB Found Partially Open; March 16, 2014
- IR 1637579; Fire Door D-317 Needs Assistance in Closing; March 24, 2014
- IR 1637581; Door D-393 Need Help Due to High D/P; March 24, 2014
- IR 1637879; Fire Door D-318 Needs Assistance Closing; March 24, 2014
- IR 1637881; Fire Door D-349 Needs Assistance in Closing; March 24, 2014
- IR 1638011; Fire Door D-379 Doesn't Auto Close or Latch; March 25, 2014
- IR 1638013; Fire Door D-378 Will Not Auto Close and Latch; March 25, 2014
- IR 1638014; Fire Door D-337 Would Not Auto Close or Latch; March 25, 2014
- IR 1638015; Fire Door D-338 Would Not Auto Close and Latch; March 25, 2014
- IR 1638041; Fire Door D-417 Would Not Auto Close; March 25, 2014
- IR 1638887; IEMA Inspector Observations of Completed Work Orders; March 25, 2014
- IR 1638906; Locked Doors Found Within Unlocked Fire Door Surveillance, March 26, 2014
- IR 1640562; D-474 Does Not Auto Close Due to D/P, March 30, 2014
- IR 1642074; Report that D-383 Failed to Latch; April 2, 2014
- BwAP 1110-1; Fire Protection Program System Requirements; Revision 32
- 0BwOS FP.7.2.D-1; Unlocked Fire Door Daily Surveillance; Revision 11
- EC 339805; 2002 Corp EC May Not Have Met Intent of NFPA 80; Revision 0 and 1
- Braidwood Generating Station Pre-Fire Plan 178, FZ 12.1-0, FH 401' Fuel Handling Building, Revision 1
- Braidwood Generating Station Pre-Fire Plan 224, FZ 18.12, LSH 602' Lake Screen House, Revision 2
- Braidwood Generating Station Pre-Fire Plan 225, FZ 18.13-0, LSH 602' Diesel Driven Fire Pump Cubicle, Revision 0
- Braidwood Generating Station Pre-Fire Plan 47, FZ 5.4-1, SWGA 451' Division 12, MEER & Battery Room, Revision 0
- Braidwood Generating Station Pre-Fire Plan 48, FZ 5.4-2, SWGA 451' Division 22, MEER & Battery Room, Revision 0
- Braidwood Generating Station Pre-Fire Plan 88, FZ 9.1-1, FZ 9.4-1, DG 401' Diesel Generator Room 1B & Day Tank Room, Revision 0
- Braidwood Generating Station Pre-Fire Plan 137, FZ 11.4A-1, AB 383' Unit 1 Aux Feedwater Pump Diesel, Revision 0

1R06 Flood Protection

- IR 1638563; Hose Leaks During Setup; March 24, 2014
- BwAP 575-2; Hose Identification, Revision 11

1R11 Licensed Operator Regualification Program

- 1BwOS TRM 3.3.h.1; Power Distribution Monitoring System (PDMS) Operability Weekly Surveillance; Revision 8

1R12 Maintenance Effectiveness

- IR 0124721; Delayed Start of the 1B Diesel Driven AF Pump; September 20, 2002
- IR 0171470; NRC Follow-Up Questions Regarding 1B AF Pump; August 12, 2003
- IR 0241207; Track Results of Byron AF Pump Inoperability Investigation; August 2, 2004
- IR 0481004; Time Delay Relays Found Out of Tolerance in 1AF013; April 20, 2006
- IR 0583152; 50.59 Evaluation Should Have Been Performed; October 17, 2006
- IR 0622903; Documenting 1/2A AF Pumps Response Time in Loop; May 15, 2007
- IR 1114604; Concern with Operability Determination; July 7, 2010
- IR 1226235; Temporary Hose Rupture Wets Vital Equipment; June 8, 2011
- IR 1635957; 2BwOSR 3.6.7.5.2 on Hold Due to Questionable Hose Integrity; March 20, 2014
- IR 1636017; Braidwood Station Hose Vulnerability; March 20, 2014
- IR 1637197; WEC Roll-Up IR for 03/17 Work Week; March 22, 2014
- IR 1638563; Hose Leaks During Setup; March 24, 2014
- BwAP 575-2; Hose Identification; Revision 11
- HU-AA-1211-F-01; MM Containment Spray Additive Flow Rate Verification Train; Revision 1
- MA-AA-716-008; WO 01519391-02; Revision 9
- MA-AA-716-010-F-01; WO 01519391-02; Revision 1
- MA-AA-716-011; Maintenance Material List; Revision 16
- MA-AA-716-011; "As Found" Condition Codes (Typical); Revision 17
- MA-BR-792-042; Torque Wrench Calibration Verification – Wrench ITC# 2884689; March 20, 2014
- MA-MW-736-600; Torquing and Tightening of Bolted Connection Checklist; Revision 5
- WC-AA-104; Containment Spray Additive Flow Rate Verification – WO 01519391-02; Revision 20a
- WO 01519391 02 and 06; Train B Containment Spray Additive Flow Rate Verification; March 20, 2014
- Material Requests 02405352, 02580157, 02405353, 02580833; WO 1519391; MM - Set-Up Equipment Task for CS SP; March 17, 2014
- Material Requests 02291629, 02450481 MMD Support for Surveillance BwVSR 3; April 5, 2013
- McMaster-Carr High-Flow Stainless Steel Check Valves
- Root Cause Investigation Report; #1226235, Temporary Hose Ruptured and Wetted Vital Plant Equipment; July 18, 2011

1R13 Maintenance Risk Assessments and Emergent Work Control

- 2B RH Pump Work Window; 2RH-1PB OOS; January 2014
- SFP Time to Boil Comp Measures; 2FC01P – Spent Fuel Cooling
- 2A SI Pump Work Window – 2A SI Pump OOS; March 2014
- 1B SX Pump Unavailable – March 2014; Protected Equipment
- 2B CS Train Spray Additive Test – March 2014; Protected Equipment

1R15 Operability Evaluations

- IR 1609756; U2 TSLB-4 Status Light Reactor Trip Breaker B Open Intermittent; January 17, 2014
- IR 1624589; Review of Main Steam Isolation IR from Byron; February 21, 2014
- IR 1602847; Water in 2A AFW Flow Indicator; December 24, 2013
- IR 1693528; NRC Questions on AF X-Tie Header Being Water Solid; January 3, 2014

- Operability Evaluation 14-001; EC 396606, IR 1605160 – Units 1/2 Diesel Generator (1DG01KA-aa, 1DG01KB-AA, 2DG01KA-AA, 2DG01KB-AA); Revision 0
- Westinghouse Memo; Functionality Assessment of Top Nozzle Leaf Springs with Respect to Niobium-Rich Inclusions; March 3, 2014
- Westinghouse Letter to Exelon; Top Nozzle Leaf Spring Data for Braidwood 1 Reload 17 Region 20 Fuel; March 3, 2014
- Westinghouse Memo; Braidwood Fuel Assessment for NSAL-99-004, RI Applicability; March 3, 2014
- Figure 12.1-1; Relay Protection System
- Figure 12.1-2; Solid State Protection System
- Drawing 20E-2-4030EF66; Schematic Diagram Reactor Protection Reactor Trip Part 1 – Train B; April 6, 1985

1R19 Post Maintenance Testing

- 1BwOSR 5.5.8.CS-3A; Comprehensive Full Flow Test for 1A Containment Spray Pump (1CS01PA) and Check Valves 1CS003A, 1CS011A; Revision 12
- MA-AA-716-010-F-01; Work Package 01699610-04; Revision 1
- MA-AA-741-205; Calibration of Pressure/Differential Pressure Gauge; Revision 1
- WC-AA-104; Industrial Safety Risk Screening; Revision 20
- WO 01699610 01; IST – For 1CS003A/11A-U1 ASME Surveillance Requirements for 1CS01PA & Check Valves; March 14, 2014
- WO 01699610 02; IST - For 1CS003A/11A-U1 ASME Surveillance Requirements for 1CS01PA & Check Valves; March 16, 2014
- WO 01699610 04; IST - For 1CS003A/11A-U1 ASME Surveillance Requirements for 1CS01PA & Check Valves; March 14, 2014
- Fragnet 1ACS14; Pages 23, 24, and 25

1R20 Refuel & Outage Activities

- OU-AP-201, New Fuel Receipt and Inspection, Revision 10

1R22 Surveillance Testing

- IR 1632024; Valve Plateau Times Outside Specified Criteria; March 11, 2014
- AD-AA-101-F-07; Writer's Guide Compliance Checklist; Revision 0
- BwOP SI-100; Energizing and De-Energizing SVAG Valve MCCS and SI Accumulator Outlet Valves in Modes One Through Four; Revision 5
- 2BwOSR 3.3.2.8-602B; Unit Two ESFAS Instrumentation Slave Relay Surveillance (Train B – K602, K647 and K648); Revision 14
- 2BwOSR 3.8.1.14, Unit 2 2A Diesel Generator Surveillance; Revision 5
- 1BwOSR 3.8.1.14, Unit 1 1A Diesel Generator Surveillance; Revision 15
- 1BwOSR 3.8.1.14, Unit 1 1B Diesel Generator Surveillance; Revision 15
- BwOSR 5.5.8.CS-3B; Comprehensive Full Flow Test for 2B Containment Spray Pump (2CS01PB) and Check Valves 2CS003B, 2CS011B; Revision 11
- 1BwOSR 5.5.8.CS-3B; Comprehensive Full Flow Test for 1B Containment Spray Pump (1CS01PB) and Check Valves 1CS003B, 1CS011B; Revision 13
- ER-AA-302; Motor-Operated Valve Program Engineering Procedure; Revision 5
- ER-AA-302-1003; MOV Margin Analysis and Periodic Verification Test Intervals; Revision 8
- ER-AA-302-1006; Motor-Operated Valve Maintenance and Testing Guidelines; Revision 12
- ER-AA-321-1005; Attachment 1 Condition Monitoring Plan – CV07B-1; Revision 4

- ER-AA-321-1005; Attachment 1 Condition Monitoring Plan – CVC10-1; Revision 4
- MA-AA-723-300; Diagnostic Testing of Motor Operated Valves; Revision 7
- WO 01705431 01; IST-For 2CS003B/11B-ASME Surveillance Requirements for 2CS01PB & Check Valves; March 18, 2014
- 24 Hour Shift Log, February 3, 2014
- Exelon MOV Stem Nut Wear Analysis; Valve BWROG1; May 21, 2012
- FNW Cast Steel Gate & Globe Stem Characteristics; Gate Valve 150; Figure 451 & 551

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

- RP-AA-302; Determination of Alpha Levels and Monitoring; Revision 6
- RP-AA-301; Radiological Air Sampling Program; Revision 7
- RP-AA-700-1246; Operation of Air Samplers
- RP-BR-301-1000; Air Sampling of Service Air Particulate and Iodine Contamination; Revision 0
- RP-AA-224; CEDE Dose Tracking Using Lapel Air Samplers; Revision 0
- RP-AA-700-1301; Calibration, Source Check, Operation, and Set-up of the Eberline Beta Air Monitor, Model AMS-4; Revision 0
- RP-BR-911; 1RE-PR011J Radiation Monitor Radiological and Non Radiological Air Sampling; Revision 11
- WO-01609053; Operation Annual Check of Licensed Operators Mask Inserts; January 16, 2014
- RP-AA-825-1029; Operation and Inspection of the 3M ADFLO PAPR Blower and L-905SG Helmet with Speedglass; Revision 0
- RP-AA-825-1014; Operation and Inspection of the 3M Versaflo TR-300 PAPR System; Revision 2
- RP-BR-825-1003; Operation, Inspection and Use of the MSA Firehawk Self-Contained Breathing Apparatus (SCBA); Revision 2
- IR-01636846; UFSAR Enhancement Needed for Section 6.5.1.1.2D (Charcoal Filter Iodine Absorption Testing); March 21, 2014

2RS4 Occupational Dose Assessment

- Teledyne Brown Engineering Environmental Services; Second Quarter 2013 Quality Assurance Report
- NUPIC Audit/Survey Cover Page Teledyne Brown Engineering Environmental Services No. 23484
- RP-AA-203-1001; Personnel Exposure Investigation; Revision 7
- HUBBA6071; RP-AA-203-1001; Personnel Exposure Investigation; Primary Record Adjusted; January 15, 2014
- GUSTA0617; RP-AA-203-1001; Personnel Exposure Investigation; Primary Record Adjusted; January 15, 2014
- RP-AA-229; Fastscan ABACOS Plus Whole Body Counter (WBC) Calibration; Revision 1
- RP-AA-230; Operation of the Canberra Fastscan Whole Body Counter; Revision 1
- Canberra Report; Calibration of the Canberra Fastscan A3 WBC System at the Braidwood; Report Date July 30, 2013
- RP-AA-229; Canberra Calibration Acceptance Criteria; August 2, 2013
- RP-AA-211; Personnel Dosimetry Performance Verification; Revision 10
- RP-AA-220; Bioassay Program; Revision 9
- RP-AA-221; Review, Correction, and Analysis of Whole Body Count Data; Revision 2

- RP-AA-225; Quality Control Operations for the Canberra Fastscan Whole Body Counter; Revision 3
- RP-AA-250; External Dose Assessments from Contamination; Revision 5
- RP-AA-270; Prenatal Radiation Exposure; Revision 6
- RP-AA-11; External Dose Control Program Description; Revision 11
- RP-AA-201-1001; Radiological Instruction Sheet
- RP-AA-280-1001; Generation of Occupational Exposure Reports in Passport; Revision 2
- NVLAP 100518-0; Landauer, Inc.; Certification from January 2014 through December 2014
- IR-01472509; Slightly Elevated Background Levels on Whole Body Counter; February 7, 2013
- IR-01380614; NOS ID RP Technician Exiting RCA via OOS Portal Monitor; June 2, 2012
- IR-01445297; Individual Alarmed Gatehouse Portal Monitor Due to PCE; November 28, 2012

40A1 Performance Indicator Verification

- LS-AAA-2140; Occupational Exposure Control Effectiveness; Revision 5
- RP-AA-203-1001; Personnel Exposure Investigation for PI Verification; Revision 6
- Personnel Exposure Investigation for PI Verification from January 2013 through February 2014

40A2 Problem Identification and Resolution

- IR 1275290; 1AF006A Possible Leakby; October 11, 2011
- IR 1602847; Water in 2WF01MA flow Indicator; December 24, 2013
- IR 1603528; NRC Questions on AF X-Tie Header Being Water Solid; January 3, 2014
- IR 1603690; 1A AF Cross-Tie As-Found UT Reading Needed – 1AF03AA; January 3, 2014
- IR 1603692; 1B AF Cross-Tie As-Found UT Reading Needed – 1AF03AB; January 3, 2014
- IR 1603693; 2B AF Cross-Tie As-Found UT Reading Needed; January 3, 2014
- IR 1603715; Voids in 2A AF Suction Line Exceed Acceptance Criterion; January 3, 2014
- IR 1605946; Need UT Verification OD 2A AF Suction Line by February 3, 2014; January 9, 2014
- IR 1619974; Need to Clear the Drain Line for 1WF01MA; February 11, 2014
- IR 1623465; Monthly UT Results for 2A AF Pump SX Suction; February 19, 2014
- IR 1635179; U1 Secondary Tritium Increase; March 18, 2014
- IR 1635744; Lake Work: Repair Washout(s) and Slumps on the Lake Dike; March 19, 2013
- IR 1636759; Known Gas Void Trended at 1SI06BA; March 21, 2014
- IR 1637581; Door D393 Need Help Due to High D/P; March 24, 2014
- IR 1637820; Loaded LSH Fish Basket in Suspended Position; March 24, 2014
- IR 1638728; Documentation of 1B SX Troubleshooting Pump Trend; March 25, 2014
- IR 1639155; Tritium Sample Needed From Resin Sluice Line for TS; March 27, 2014
- IR 1639324; Trend in Fire doors Requiring Assistance to Close; March 27, 2014
- IR 1639414; Westinghouse Fuel Issue Grinding Marks on Corner Grid Cells; March 27, 2014
- IR 1639619; Maintenance Garage Warehouse Missing Part of Roof; March 28, 2014
- EC 380588 001; Auxiliary Feedwater; March 7, 2013
- ER-AA-2009; Managing Gas Accumulation; Revision 2
- PI-AA-125; Corrective Action Program (CAP) Procedure; Revision 0

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access Management System
ALARA	As-Low-As-Reasonably-Achievable
AOP	Abnormal Operating Procedure
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
Δ CDF	Delta Core Damage Frequency
CFR	Code of Federal Regulations
CW	Circulating Water
LSH	Lake Screen House
IEMA	Illinois Emergency Management Agency
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
IST	Inservice Testing
LER	Licensee Event Report
LERF	Large Early Release Frequency
LOCA	Loss-Of-Coolant Accident
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PDA	Personal Digital Assistant
PI	Performance Indicator
PWR	Pressurized Water Reactor
SAPHIRE	Systems Analysis Program for Hands-on Integrated Reliability Evaluations
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SSC	Structure, System, or Component
TIA	Task Interface Agreement
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
Vdc	Volts Direct Current
WO	Work Order

M. Pacilio

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Additionally, as we informed you in the most recent NRC integrated inspection report, cross-cutting aspects identified in the last 6 months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter (IMC) 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects, which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross-cutting aspect assigned, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at Braidwood Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading_rm/adams.htm (the Public Electronic Reading Room).

Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-456; 50-457
License Nos. NPF-72; NPF-77

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Letter to Michael J. Pacilio from Eric R. Duncan dated May 9, 2014

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NRC INTEGRATED INSPECTION
REPORT 05000456/2014002; 05000457/2014002

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