



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

January 27, 2014

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

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NRC INTEGRATED
INSPECTION REPORT 05000456/2013005; 05000457/2013005

Dear Mr. Pacilio:

On December 31, 2013, 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 January 8, 2014, with Mr. M. Kanavos 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, one self-revealed finding of very low safety significance (Green) and two Severity Level IV violations were identified. The finding was determined to involve a violation of NRC requirements. However, because the finding was of very low safety significance and because the issues were entered into your Corrective Action Program (CAP), the NRC is treating these violations as Non-Cited Violations (NCVs), in accordance with Section 2.3.2 of the NRC's Enforcement Policy. Additionally, two licensee-identified violations are listed in Section 4OA7 of this report.

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 to the Resident Inspector Office at the Braidwood Station.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

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 05000456/2013005; 05000457/2013005
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 Nos: 05000456/2013005; 05000457/2013005

Licensee: Exelon Generation Company, LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, IL

Dates: October 1 through December 31, 2013

Inspectors: J. Benjamin, Senior Resident Inspector
A. Garmoe, Acting Senior Resident Inspector
J. Steffes, Acting Resident Inspector
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Approved by: E. Duncan, Chief
Branch 3
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	1
REPORT DETAILS	4
Summary of Plant Status	4
1. REACTOR SAFETY	4
1R04 Equipment Alignment (71111.04)	4
1R05 Fire Protection (71111.05)	5
1R11 Licensed Operator Requalification Program (71111.11)	6
1R12 Maintenance Effectiveness (71111.12)	7
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)	8
1R15 Operability Determinations and Functional Assessments (71111.15)	9
1R19 Post-Maintenance Testing (71111.19)	10
1R22 Surveillance Testing (71111.22)	11
1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)	16
1EP6 Drill Evaluation (71114.06)	16
2. RADIATION SAFETY	17
2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)	17
2RS2 Occupational As Low As Is Reasonably Achievable Planning and Controls (71124.02)	24
4. RADIATION SAFETY	26
4OA1 Performance Indicator (PI) Verification (71151)	26
4OA2 Identification and Resolution of Problems (71152)	27
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)	32
4OA5 Other Activities	33
4OA6 Management Meetings	35
4OA7 Licensee-Identified Violations	35
SUPPLEMENTAL INFORMATION	1
KEY POINTS OF CONTACT	1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	2
LIST OF DOCUMENTS REVIEWED	3
LIST OF ACRONYMS USED	9

SUMMARY OF FINDINGS

Inspection Report (IR) 05000456/2013005; 05000457/2013005; 10/01/2013 – 12/31/2013; Braidwood Station, Units 1 & 2; Surveillance Testing, Radiological Hazard Assessment and Exposure Controls, Identification and Resolution of Problems.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding and two Severity Level IV violations were identified by the inspectors. The finding and violations 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, "Components Within the Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Severity Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.9(a), "Completeness and Accuracy of Information," when licensee personnel failed to provide complete and accurate operator logs of record. Specifically, operator log entries of record on May 9, 2013, did not accurately document entry into and exit from Limiting Condition for Operation (LCO) 3.0.3. Initial corrective actions included additional late log entries and issuance of Operations Standing Order 13-10, "Corrections to Electronic Log Entries," which provided interim guidance to operators regarding how to make revisions to electronic log entries. The Operations Director also initiated discussions with the fleet Operations Director peer group to determine how to incorporate guidance on revising electronic logs into procedure OP-AA-111-101, "Operating Narrative Logs and Records." The licensee entered this issue into their Corrective Action Program (CAP) as Issue Report (IR) 1519660, "Lack of Details in Log Entries."

In consultation with regional enforcement staff, the inspectors determined that the issue was more than minor because operator logs of record are material documents to the NRC, in that inspection activities are planned and conducted based, in part, on the review of operator logs and the presumption of their accuracy. In determining the significance of the violation, the inspectors referenced the examples of violations in Section 6.9, "Inaccurate and Incomplete Information or Failure to Make a Required Report," of the NRC Enforcement Policy. Because the issue was determined to be more than minor, but did not meet the threshold of the examples of Severity Level I, II, or III violations, the inspectors determined this issue was a Severity Level IV violation. Because a more-than-minor Reactor Oversight Process finding was not identified, there was no cross-cutting aspect associated with this violation. (Section 1R22.2.b)

Cornerstone: Emergency Preparedness

Severity Level IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.72(b)(3)(xiii) when licensee personnel failed to submit a report required by 10 CFR 50.72 for a loss of emergency assessment capability when an unplanned degradation was identified associated with the Technical Support Center (TSC) ventilation filtered make-up train. Specifically, the discharge damper for the TSC ventilation filtered make-up fan was found unexpectedly closed, which adversely impacted the ability to supply filtered air to the TSC absent implementation of compensatory actions. Corrective actions included making the required Event Report on January 14, 2014. The licensee entered this issue into their CAP as IR 1598598, "Wording Differences Between NUREG-1022 and Reportability Manual," and IR 1608133, "ENS [Event Notification System] Call Made Due to TSC Ventilation Impact in October 2013."

The inspectors determined that this issue had the potential to impact the regulatory process based, in part, on the generic communications input that 10 CFR 50.72 reports serve. Since the issue impacted the regulatory process, it was dispositioned through the traditional enforcement process. The inspectors determined that this issue was a Severity Level IV violation based upon Example 6.d.9 in the NRC Enforcement Policy. Example 6.d.9 specifically stated, "The licensee fails to make a report requirement by 10 CFR 50.72 or 10 CFR 50.73." Because a more-than-minor Reactor Oversight Process finding was not identified, there was no cross-cutting aspect associated with this violation. (Section 4OA2.2b)

Cornerstone: Occupational Radiation Safety

Green. The inspectors identified a self-revealed finding of very low safety significance and an associated NCV of Technical Specification 5.7.1 when licensee personnel failed to adequately monitor and provide positive control over activities within a high radiation area that was greater than 100 millirem per hour (mrem/hr) but less than or equal to 1000 mrem/hr from a radiation source which was created during the cycling of valve 1RH8701B inside the missile barrier in containment. A slug of material dislodged from the valve and was transported to a location that resulted in localized elevated dose rates where an individual was performing work. As an immediate corrective action, the licensee instituted appropriate radiation protection controls and initiated an Apparent Cause Evaluation (ACE) to review the event in more detail. The licensee entered this issue into their CAP as IR 1559430, "ED [Electronic Dosimeter] Dose Rate Alarm Received."

The performance deficiency was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, not evaluating the radiological impact of the slug of radioactive material being transported to an area where a worker was performing work caused the worker to receive unnecessary and unplanned exposure to radiation that if left uncorrected could lead to a more significant safety concern in that a worker could receive a much higher dose under different circumstances. The inspectors determined that the finding was of very low safety significance (Green) using IMC 0609, Appendix C. This finding had a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area because licensee personnel failed to validate and communicate the

changing dose rates of the work area after Operations personnel performed work that affected the dose rates in the work area (H.4(a)). (Section 2RS1.6b).

B. Licensee-Identified Violations

Two violations of very low safety significance or Severity Level IV that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

At the beginning of the inspection period Unit 1 was at approximately 30 percent power and in power ascension following a planned refueling outage. Unit 1 reached full power on October 2, 2013, and remained at or near full power for the remainder of the inspection period.

Unit 2 operated at or near full power for the entire inspection period.

1. REACTOR SAFETY

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

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:

- Unit 1 Station Air Compressor (SAC) with Unit 2 SAC Out of Service for Maintenance; and
- 2B Containment Spray (CS) System with 2A CS System Out of Service for Maintenance.

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, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), Issue Reports (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 two partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- AB [Auxiliary Building] 346' Elevation General Area (Fire Zone 11.2-0);
- AB 364' Elevation General Area (Fire Zone 11.3-0);
- AB 426' Elevation Laundry Room (Fire Zone 11.6-0); and
- Unit 2 Main Steam Tunnel (Fire Zone 18.3-2).

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 four quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On October 31, 2013, the inspectors observed a fire brigade activation during a fire drill involving a simulated fire in the Quality Assurance records vault. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires.

The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated included the following:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- adequacy and sufficiency of firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

Documents reviewed are listed in the Attachment.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05-05.

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 October 23, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during 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;
- 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
- 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 December 3, 2013, the inspectors observed operator response to unexpected conditions during a quarterly control rod surveillance. 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;
- 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
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The 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:

- Station Air and Instrument Air System.

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:

- Unit 2 SAC Maintenance Window; and
- Unit 0 Train A Control Room Ventilation (VC) Maintenance Window.

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 two samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Potential High Energy Line Cracks in Auxiliary Feedwater (AF) Tunnel, Operability Evaluation 13-006;
- Hydrodynamic Analysis of Auxiliary Building Relief Header, Operability Evaluation 13-004;
- 1FW009D Nitrogen Leak Impact to Containment Isolation Function; and
- 1B Essential Service Water (SX) Pump Oil Leak.

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 four samples as defined in IP 71111.15-05.

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:

- Unit 1 AF Pump Standpipe Vacuum Breaker Installation;
- Unit 2 SAC Following Maintenance;
- Unit 2B AF Pump Following Maintenance;
- Unit 1C Reactor Containment Fan Coolers Following Maintenance; and
- 2B Emergency Diesel Generator (EDG) Following Maintenance.

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

The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and applicable NRC generic communications to ensure that the test results ensured 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 being 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.

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:

- Bus 242 Undervoltage Protection Monthly Surveillance (Routine);
- Unit 1 Moveable Control Assemblies Quarterly Surveillance (Routine);
- Steam Generator Power Operated Relief Valve Stroke and Preconditioning Evaluation (Routine); and
- 2B Chemical and Volume Control System (CVCS) Pump American Society of Mechanical Engineers (ASME) Surveillance (Inservice Testing).

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 inservice testing 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 three routine surveillance testing samples and one inservice testing sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

.2 (Closed) Unresolved Item (URI) 05000456/2013003-03; 05000457/2013003-03, Implications of VC Monthly Surveillance

a. Inspection Findings

This URI was opened in Section 1R22 of NRC Inspection Report 05000456/2013003; 05000457/2013003 after the inspectors questioned whether the appropriate TS Limiting Condition for Operation (LCO) was entered during performance of procedure 0BwOSR 3.7.10.1-1, "Control Room Ventilation Filtration Surveillance (Train A)." At the conclusion of that inspection period the inspectors were awaiting the licensee's position on LCO applicability and reviewing information to determine whether the appropriate LCO was entered.

Based on a subsequent review, the inspectors concluded that the licensee appropriately entered LCO 3.7.10, Condition A for the A train of VC from 4:33 a.m. to 4:35 a.m. on May 9, 2013, despite the inappropriate documentation of that action in the control room operator logs. This was initially correctly logged in control room operator logs, but the logs were subsequently incorrectly revised to reflect entry into Condition B instead. With both trains of VC in LCO 3.7.10 Condition A, the licensee would be directed to enter LCO 3.7.10 Condition F, which directed immediate entry into LCO 3.0.3 for both units. By revising the log entry for the 'A' VC train to Condition B, the licensee appeared to remove the need to enter Condition F and LCO 3.0.3.

Based on discussions with licensee and NRC personnel, the inspectors concluded that Condition A was the appropriate LCO condition to enter when automatic realignment of VC was blocked. This URI is closed.

b. Findings

Introduction: The inspectors identified a Severity Level IV NCV of 10 CFR 50.9(a), "Completeness and Accuracy of Information," when licensee personnel failed to provide

complete and accurate control room operator logs of record. Specifically, operator log entries of record on May 9, 2013, failed to accurately document entry into and exit from LCO 3.0.3.

Description: At 4:05 p.m. on May 8, 2013, the licensee commenced a routine monthly surveillance of the 'A' VC filtration train using procedure 0BwOSR 3.7.10.1-1, "Control Room Ventilation Filtration Surveillance (Train A)." During performance of the surveillance, at 7:09 p.m., the licensee noted that a 'B' VC train damper was unexpectedly open when it should have been closed. Approximately 25 minutes later, the damper repositioned closed in the absence of any operator action. Operators were dispatched to inspect the damper and identified a degraded bearing. As a result, the licensee declared the 'B' train of VC inoperable and entered LCO 3.7.10, Condition A, "One VC Filtration System Train Inoperable for Reasons Other Than Condition B." Condition B stated, "One or More VC Filtration System Trains Inoperable Due to Inoperable CRE [Control Room Envelope] Boundary in Mode 1, 2, 3, or 4."

The licensee elected to continue with the routine surveillance of the 'A' VC train. Step F5.1 of procedure 0BwOSR 3.7.10.1-1 directed Operations to enter LCO 3.7.10, Condition A. The licensee entered LCO 3.7.10, Condition A, for the 'A' VC train at 4:33 a.m. on May 9, 2013, and exited that Condition at 4:35 a.m. With both trains inoperable for reasons other than Condition B, Condition F was applicable, which directed immediate entry into LCO 3.0.3. Thus, from 4:33 a.m. to 4:35 a.m. both units also entered LCO 3.0.3.

During plant status activities on May 9, 2013, the inspectors reviewed the operating logs at approximately 6:30 a.m., and noted the log entries for entering LCO 3.7.10, Condition A and LCO 3.0.3 at 4:33 a.m. and exiting those LCOs at 4:35 a.m. The specific log entries were as follows:

5/9/2013 4:33:00AM	Entered 0BwOL 3.7.10 Condition A for performance of 0BwOSR 3.7.10.1-1, Control Room Ventilation (VC) Filtration Surveillance (Train A) while selected to outside air for Section 5, Parallel Contact Check. Also entered 0BwOL 3.0.3 due to 0B VC Train being inoperable due to damper 0VC008Y.
5/9/2013 4:35:00AM	Exited 0BwOL 3.7.10 Condition A and 0BwOL 3.0.3 for performance of 0BwOSR 3.7.10.1-1, Control Room Ventilation (VC) Filtration Surveillance (Train A).

Later that morning, when the logs were reviewed again, the inspectors noted those log entries had been revised. There was no indication that a prior log entry had been deleted or corrected, or that LCO 3.0.3 had ever been entered. Because the licensee now believed the 'A' VC train had been in Condition B, Condition F and LCO 3.0.3 were thought to be not applicable. However, the licensee, at the time of the event, signed off on a procedure step to enter Condition A and the Unit Supervisor concurred.

Thus, Condition F and LCO 3.0.3 applied. The specific log entries were as follows:

5/9/2013 4:33:00AM	(Late Entry 1030 5/9/13) Entered 0BwOL 3.7.10 Condition B for performance of 0BwOSR 3.7.10.1-1, Control Room Ventilation (VC) Filtration Surveillance (Train A) while selected to outside air for Section 5, Parallel Contact Check.
5/9/2013 4:35:00AM	(Late Entry 1030 5/9/2013) Exited 0BwOL 3.7.10 Condition B for performance of 0BwOSR 3.7.10.1-1, Control Room Ventilation (VC) Filtration Surveillance (Train A).

The inspectors reviewed licensee procedure OP-AA-111-101, "Operating Narrative Logs and Records," Revision 8. Step 4.1.1 of OP-AA-111-101 required records to be maintained at a level of detail that allowed reconstruction of shift activities by oncoming personnel that do not have the benefit of a face-to-face discussion with shift staff. Step 4.1.2 directed the licensee to ensure all records were legible, accurate, complete, and understandable. The inspectors also noted that Step 4.1.10 directed the licensee to control corrections to hand-written and printed records by drawing a single line through the erroneous entry and inserting the corrected information. However, the licensee used electronic rather than hand-written logs and procedure OP-AA-111-101 contained no guidance regarding corrections to electronic logs. Based on discussions with Operations personnel, including the Senior License Holder, operating logs for a 12-hour Operations shift were not considered final until the oncoming Shift Manager reviewed and "finalized" the logs. In the instance described above, the licensee revised the LCO Condition entered and exited in the operating logs before they were finalized such that an independent review of the final operating logs of record would not have revealed an accurate account of what occurred.

The inspectors identified and questioned this change prior to the licensee entering the issue into their CAP as IR 1519660, "Lack of Detail in Log Entries" dated May 30, 2013, or adding a late log entry describing in more detail what occurred. In response to ongoing discussions about the issue, the licensee added additional late log entries to clarify what occurred at 4:33 a.m. and 4:35 a.m. on May 9, 2013, and issued Operations Standing Order 13-10, "Corrections to Electronic Log Entries," which provided interim guidance to operators regarding how to make revisions to electronic log entries. The Operations Director also initiated discussions with the fleet Operations Director peer group to determine how to incorporate guidance on revising electronic logs into procedure OP-AA-111-101.

Analysis: The inspectors determined that the practice of revising operator logs in a non-transparent manner, which resulted in inaccurate log entries associated with entry into LCO 3.0.3 on May 9, 2013, was an issue of concern. Through consultation with regional Enforcement and Investigations Coordination Staff (EICS), the issue was determined to not involve a willful violation. In accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," the inspectors considered both traditional enforcement and Reactor Oversight Process aspects in evaluating this issue. The inspectors determined that the issue of concern represented a performance deficiency in that standards were not met (operator logs were not complete and accurate and log-keeping procedural guidance did not adequately address corrections and revisions to electronic logs) and it was reasonably within the licensee's ability to foresee and correct. The inspectors reviewed the Reactor Oversight Process minor questions

and the examples contained in IMC 0612, Appendix E, and determined that the performance deficiency was of minor safety significance.

Because this issue involved incomplete and inaccurate information that was required to be maintained by the Commission's regulations (10 CFR 50, Appendix B, Criterion XVII), 10 CFR 50.9 was applicable and, thus, the inspectors determined that traditional enforcement applied. The inspectors dispositioned the traditional enforcement aspect in accordance with the NRC Enforcement Policy. In consultation with regional enforcement staff, the inspectors determined that the issue was more than minor because operator logs of record are material documents to the NRC in that NRC inspection activities are planned and conducted based, in part, on the review of operator logs and the presumption of their accuracy. In determining the significance of the traditional enforcement aspect, the inspectors referenced the examples of violations in Section 6.9, "Inaccurate and Incomplete Information or Failure to Make a Required Report," of the NRC Enforcement Policy. Because the issue was determined to be more than minor, but did not meet the threshold of the examples of Severity Level I, II, or III violations in Section 6.9 of the NRC Enforcement Policy, the inspectors determined this issue was a Severity Level IV violation.

Because a more-than-minor Reactor Oversight Process finding was not identified, there was no cross-cutting aspect associated with this violation.

Enforcement: Title 10 CFR Part 50.9(a) requires, in part, that information required by the Commission's regulations to be maintained by the licensee shall be complete and accurate in all material respects. Title 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," requires, in part, that sufficient records, including operating logs, shall be maintained to furnish evidence of activities affecting quality.

Contrary to the above, on May 9, 2013, the licensee failed to maintain operating logs that were an accurate representation of activities affecting quality. Specifically, the operator logs of record did not reflect entry into LCO 3.0.3, which was done in accordance with a procedure step that had been signed off as completed.

In response to ongoing discussions about the issue, the licensee added additional late log entries to clarify what occurred on May 9, 2013, and issued Operations Standing Order 13-10, "Corrections to Electronic Log Entries," which provided interim guidance to operators regarding how to make revisions to electronic log entries. The Operations Director also initiated discussions with the fleet Operations Director peer group to determine how to incorporate guidance on revising electronic logs into procedure OP-AA-111-101, "Operating Narrative Logs and Records." Because this violation was entered into the licensee's CAP as IR 1519660, "Lack of Detail in Log Entries," it is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000456/2013005-01; 05000457/2013005-01, Failure to Maintain Accurate Operator Logs)**

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The Office of Nuclear Security and Incident Response headquarters' staff performed an in-office review of the latest revisions to the Emergency Plan and various Emergency Plan Implementing Procedures (EPIPs) located under ADAMS Accession Numbers ML123260651, ML130180297, ML13162A199, and ML13200A124, as listed in the Attachment.

The licensee transmitted the EPIP revisions to the NRC pursuant to the requirements of 10 CFR Part 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee Emergency Preparedness Drill from the Technical Support Center (TSC) on October 23, 2013, and again on October 30, 2013, from the TSC and the simulator to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the TSC to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment.

This emergency preparedness drill inspection constituted two samples as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted one complete sample as defined in IP 71124.01-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the Occupational Exposure Control Cornerstone for follow-up. The inspectors reviewed the results of Radiation Protection (RP) Program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the potential impact of these changes and had implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material condition and performed independent radiation measurements to verify conditions.

The inspectors selected the following radiologically risk-significant work activities that involved exposure to radiation:

- Reactor Head Penetration 69 Control Rod Drive (CRD) Emergent Weld Repair A1R17;
- In Service Inspection Examinations (Including Weld Preparations); and
- Engineering: Plant, Program, Rapid Response and Design in Auxiliary Building and Containment.

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if hazards were properly identified, including the following:

- the presence of alpha emitters;
- the identification of hot particles;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials (This evaluation may include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and
- severe radiation field dose gradients that can result in non-uniform exposures of the body.

The inspectors observed work in potential airborne areas and evaluated whether the air samples were representative of the breathing air zone. The inspectors evaluated whether continuous air monitors were located in areas with low background to minimize false alarms and were representative of actual work areas. The inspectors evaluated the licensee's program for monitoring levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904, "Labeling Containers," or met the requirements of 10 CFR 20.1905(g), "Exemptions To Labeling Requirements."

The inspectors reviewed the following radiation work permits used to access high radiation areas and evaluated the specified work control instructions or control barriers:

- Reactor Head Penetration 69 CRD Emergent Weld Repair A1R17;
- In Service Inspection Examinations (Including Weld Preparations); and
- Engineering: Plant, Program, Rapid Response and Design in Auxiliary Building and Containment.

For these radiation work permits, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each radiation work permit were clearly identified. The inspectors

evaluated whether electronic personal dosimeter alarm setpoints were in conformance with survey indications and plant policy.

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitored potentially contaminated material leaving the radiological control area and inspected the methods used for the control, survey, and release of material from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had an appropriate sensitivity for the types of radiation present.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicated the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee had established a de facto "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, RP job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high radiation work areas with significant dose rate gradients.

The inspectors reviewed the following radiation work permits for work within airborne radioactivity areas with the potential for individual worker internal exposures:

- Reactor Head Penetration 69 CRD Emergent Weld Repair A1R17;
- In Service Inspection Examinations (Including Weld Preparations); and
- Engineering: Valve Team Outage Activities in Unit 1 Containment.

For these radiation work permits, the inspectors evaluated airborne radioactive controls and monitoring, including the potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high efficiency particulate air ventilation system operation.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high radiation areas and very high radiation areas to verify conformance with the occupational radiation safety performance indicator.

b. Findings

No findings were identified.

.6 Risk Significant High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the RP manager the controls and procedures for high risk high radiation areas and very high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduced the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that had the potential to become very high radiation areas during certain plant operations with first line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations required communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards, including re-access authorization.

The inspectors evaluated licensee controls for very high radiation areas and areas with the potential to become very high radiation areas to ensure that an individual was not able to gain unauthorized access to a very high radiation area.

b. Findings

Introduction: The inspectors identified a self-revealed finding of very low safety significance (Green) and an associated NCV of TS 5.7.1 when licensee personnel failed to adequately monitor and provide positive control over activities within a high radiation area.

Description: On September 15, 2013, a Braidwood Station contractor performed a Non-Destructive Evaluation (NDE) inspection on a 12-inch weld on a pipe inside the missile barrier in the Unit 1 containment building. This area was posted and controlled as a locked high radiation area. This worker was standing on a scaffold to access the inspection point near valve 1RH8701B when the worker received an electronic dosimeter (ED) dose rate alarm. The individual's dose rate alarm setting was 250 millirem per hour (mrem/hr) and the maximum rate the individual received was 285 mrem/hr. During the pre-job briefing, the individual was told that the pipe was 180 mrem/hr on contact, and 50 mrem/hr at 30 centimeters (cm) based on a survey that had been performed two days earlier. A follow-up radiation survey performed near valve 1RH8701B after the ED alarm was received indicated dose rates of 500 mrem/hr on contact and 150 mrem/hr at 30 cm. The licensee determined that the increase in radiation levels was a result of the planned cycling of valve 1RH8701B.

Technical Specification 5.7.1 states, in part, that entry into high radiation areas could be made with a radiation monitoring device that continuously integrated the radiation dose

rate in the area and alarmed when a preset integrated dose was received, after the dose rate levels in the area had been established and personnel were aware of them. While the worker was given a radiation monitoring device and a briefing, the dose rate levels in the area was not properly established before the worker entered the area. Instead, RP personnel assumed that no radiological changes had occurred after 1RH8701B was cycled without any verification.

The licensee failed to perform the radiological surveys necessary to implement controls during and after valve 1RH8701B manipulation to preclude workers from accessing the work area with elevated dose rates. During this work activity, a worker performing the NDE inspection on the weld received an unplanned ED dose rate alarm due to the localized elevated dose rates at the work station. The worker appropriately exited the area and contacted RP staff due to the dose rate alarm the worker received. The worker did not exceed any dose limits. The evaluation of the worker's ED alarm indicated a constant radiation level exceeding 500 mrem/hr on contact with the piping. In response to the worker's ED alarm, the licensee's measurements of radiation levels in the impacted areas confirmed that a slug of material became dislodged from valve 1RH8701B during the valve cycling and moved to the location where the worker was located.

The RP department did not post personnel or individuals qualified in RP procedures in areas that could be affected by increased dose rates. Instead, the licensee relied on September 13, 2013, survey data. This outdated survey data of 180 mrem/hr on contact and 50 mrem/hr at 30 cm was used to brief the workers performing the NDE testing inside the containment 377' IMB [Inside Missile Barrier] elevation. This issue was entered into the licensee's CAP as IR 1559430, "ED Dose Rate Alarm Received," dated September 16, 2013.

Analysis: The inspectors determined that the failure to properly evaluate the radiological hazards associated with the cycling of valve 1RH8701B, which impacted the dose rates in an area where a worker was performing NDE, was a performance deficiency.

This performance deficiency was of more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, because not evaluating the radiological impact and controlling personnel exposures associated with the cycling of the valve by Operations personnel could have resulted in a worker receiving unnecessary and unplanned exposure to radiation. The inspectors noted that there was industry operating experience on controlling system valve cycling that impacted the ambient background dose rates of work areas in the containment or drywell. Consequently, the inspectors concluded that this activity was within the licensee's ability to foresee and should have been prevented. The finding was not subject to traditional enforcement since the incident did not result in actual safety consequences, did not impact the NRC's ability to perform its regulatory function, and was not willful.

Since the finding involved occupational radiation safety, the inspectors utilized IMC 0609, Appendix C, "Occupational Radiation Safety SDP," to assess its significance. The inspectors determined that the finding did not involve an overexposure, a substantial potential for an overexposure, or a compromised ability to assess dose. The finding also did not involve as low as is reasonably achievable (ALARA) planning or work controls.

Consequently, the inspectors determined that the finding was of very low safety significance (Green).

This finding had a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area because licensee personnel failed to validate and communicate the changing dose rates of the work area after Operations personnel performed work that affected the dose rates in the work area (H.4(a)).

Enforcement: Technical Specification 5.7.1 states, in part, that pursuant to 10 CFR Part 20, Paragraph 20.1601, in lieu of the requirements of 10 CFR 20.1601, each high radiation area, as defined in 10 CFR 20, in which the intensity of radiation is greater than 100 mrem/hr but less than or equal to 1000 mrem/hr at 30 cm from the radiation source, shall be barricaded and conspicuously posted as a high radiation area and entrance, therefore, shall be controlled. It further states that entry into such areas may be made after the dose rate levels in the area have been established and personnel are aware of them.

Contrary to the above, on September 15, 2013, the licensee did not implement the requirements contained in TS 5.7.1, in that the licensee did not establish the dose rate levels in a high radiation area and make personnel aware of them prior to allowing entry. Specifically, a worker was allowed entry to a high radiation area after being briefed that his specific job would expose him to doses rates of 180 mrem/hr on contact and 50 mrem/hr at 30 cm. Instead the worker was permitted entry into a field of 500 mrem/hr on contact and 150 mrem/hr at 30 cm.

Corrective actions included instituting appropriate radiological controls in the area. Because this violation was of very low safety significance and because it was entered into the licensee's CAP as IR 1559430, "ED Dose Rate Alarm Received," this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000456/2013005-02; 05000457/2013005-02; Failure to Follow Procedure and Technical Specification Associated with Control for High and Locked High Radiation Areas).**

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated RP work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the radiation work permit controls/limits in place, and whether their performance reflected the level of radiological hazards present.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective was consistent with the corrective action implemented by the licensee to resolve the reported problems. The inspectors discussed with the RP manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the RP technicians with respect to all RP work requirements. The inspectors evaluated whether RP technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed radiological problem reports issued since the last inspection that found the cause of the event to be RP technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective was consistent with the corrective actions implemented by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control 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 that involved radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

2RS2 Occupational As Low As Is Reasonably Achievable Planning and Controls (71124.02)

The inspection activities supplement those documented in NRC Inspection Reports 05000456/2012003; 05000457/2012003 and 05000456/2012005; 05000457/2012005 and constitute one complete sample as defined in IP 71124.02-05.

.1 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the RP group with the actual work activity time requirements, and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity, failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's CAP.

b. Findings

No findings were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors evaluated whether the licensee had established measures to track, trend, and if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator (PI) Verification (71151)

.1 Unplanned Transients Per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients Per 7000 Critical Hours PI for Braidwood Unit 1 and Unit 2 from the fourth quarter 2012 through the fourth quarter 2013. 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 2013, were used. The inspectors reviewed the licensee's operator narrative logs, IRs, maintenance rule records, event reports and NRC Integrated Inspection Reports for the period of October 1, 2012 through December 31, 2013, 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 unplanned transients per 7000 critical hour 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 radiological occurrences PI for the period from the first quarter 2012 through the third quarter 2013. The inspectors used PI definitions and guidance contained in the 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 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 RP 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 Corrective Action Program 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

Failure to Submit a Report Required by 10 CFR 50.72(b)(3)(xiii)

Introduction: The inspectors identified a Severity Level IV NCV of 10 CFR 50.72(b)(3)(xiii) when licensee personnel failed to submit a report required by 10 CFR 50.72 for a loss of emergency assessment capability when an unplanned degradation was identified associated with the TSC ventilation filtered make-up train. Specifically, the discharge damper for the TSC ventilation filtered path make-up fan was found unexpectedly closed, which adversely impacted the ability to supply filtered air to the TSC absent implementation of compensatory actions, and the condition was not reported as required.

Description: On October 16, 2013, at 1:46 p.m., the licensee began performance of surveillance BwIS VV-1, "Technical Support Center Ventilation System HEPA [High Efficiency Particulate Air] & Charcoal Filter Performance Test." The TSC ventilation system consists of a normal supply fan and a make-up supply fan; only the make-up supply fan can direct air through the filtered flow path to support TSC habitability in the event of a radiation release. Step 4.3.2 of procedure BwIS VV-1 directed the performer to start the TSC make-up fan. When this step was performed, control room operators received a TSC ventilation trouble alarm at 2:18 p.m. An operator was dispatched to the local ventilation panel and found four alarms: heating coil temperature high, make-up fan differential pressure (d/p) high, make-up air filter unit flow low, and health physics area positive pressure low. This combination of alarms indicated an issue with the make-up train air flow and, as a result, operators shut down the make-up fan. Once the make-up fan was shut down the alarms cleared and the licensee began troubleshooting. The troubleshooting efforts included restarting the make-up fan and at approximately 3:00 p.m., the licensee identified that make-up fan discharge damper 0VV145Y was unexpectedly closed with the fan running, which was likely the cause of the inadequate make-up train air flow and associated alarms.

At this point, the licensee indicated that operators were briefed to manually isolate the air supply to damper 0VV145Y to open the damper if the make-up train were needed to support TSC habitability. The licensee continued troubleshooting efforts that included additional starts and stops of the make-up fan and periods when damper 0VV145Y was either failed open or operator compensatory actions were credited. The damper was ultimately failed open at 8:23 p.m., until repairs could be completed. The damper was repaired via WO 1682109 on October 30, 2013.

Because the inspectors were aware of NRC Event Reports related to TSC ventilation issues, the inspectors reviewed the reportability guidance contained in NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," Revision 3. Section 3.2.13 of NUREG-1022 contained guidance the NRC staff considered acceptable for use in meeting the requirements of 10 CFR 50.72(b)(3)(xiii), which required notification to the

NRC within 8 hours of any event that resulted in a major loss of emergency assessment capability. The inspectors noted the following language in Section 3.2.13 of NUREG-1022:

A significant degradation in the licensee's ability to perform accident assessment functions assigned to a licensee primary emergency response facility (ERF) by the emergency plan. Typically, these functions would be the TSC, but may include the emergency operations facility. Degradations would not be reportable if the ERF's assessment capabilities were restored to service within the facility activation times specified in the emergency plan. Planned maintenance which impacts the accident assessment functions of the ERF, or its supporting systems, need not be reported if: (1) the ERF's assessment capabilities could be restored to service within the facility activation time specified in the emergency plan in the event of an accident or the licensee had implemented viable compensatory actions, and (2) the planned outage is not expected to, and subsequently did not, exceed 72 hours.

"Promptly" means within the licensee's emergency plan requirements for facility activation time. A "viable" compensatory action is one that: (1) can restore the required function in a reasonably comparable manner, and (2) is proceduralized prior to an event.

Because the unexpected condition of damper 0VV145Y adversely impacted the filtered make-up path for TSC ventilation and was not part of the planned surveillance activity, the inspectors did not consider the issue to be planned maintenance. As a result, the inspectors determined that the degradation would not be reportable if the damper were placed in the fail-safe open position within the TSC activation time of one hour such that compensatory actions would not be needed to provide filtered air in the event of a radioactive release. Through a review of the timeline of events developed from Sequence of Events Recorder data and discussions with Operations personnel, the inspectors determined that damper 0VV145Y was closed until 4:53 p.m. and again from 5:29 p.m. through 8:23 p.m. Thus, the inspectors concluded that the issue represented a reportable condition and confirmed this via discussion with the NUREG-1022 subject matter experts in the Offices of Nuclear Reactor Regulation (NRR) and Nuclear Security and Incident Response (NSIR).

The inspectors reviewed the licensee's reportability determination, which included the statement, "Since the function of the make-up train was capable of being restored in less than one hour (prior to TSC activation during an event) it is not reportable per the Exelon Reportability Reference Manual." The inspectors reviewed Section 1.10 of the Exelon Reportability Reference Manual, Procedure LS-AA-1110, Revision 19, and noted the following statement:

Additionally, emergent lost capability of an ERF or the TSC need not be reported if the condition can be readily remediated in a time less than required for ERF or TSC staffing, or a backup facility is available. "Promptly" means within the licensee's emergency plan requirements for facility activation time.

The inspectors identified that the licensee's reportability guidance allowed for the use of compensatory actions (i.e. remediation of a condition) for planned as well as emergent

lost assessment capability, which was beyond the allowance in NUREG-1022, Revision 3. The licensee entered this issue into their CAP as IR 1598598, "Wording Differences Between NUREG-1022 and Reportability Manual," dated December 18, 2013, and IR 1608133, "ENS [Event Notification System] Call Made Due to TSC Ventilation Impact in October 2013," dated January 14, 2014. Corrective actions included the submittal of Event Notification (EN) 49723 on January 14, 2014, and planned Reportability Manual revisions to address the difference in wording with NUREG-1022, Revision 3.

Analysis: The inspectors determined that the failure to submit a report required by 10 CFR 50.72 for a loss of emergency assessment capability when an unplanned failure was identified associated with the TSC ventilation make-up train was a performance deficiency. Specifically, the discharge damper for the TSC ventilation filtered path make-up fan was found unexpectedly closed, which would have adversely impacted the ability to supply filtered air to the TSC absent implementation of compensatory actions.

The inspectors determined that this issue had the potential to impact the regulatory process based, in part, on the generic communications input that 10 CFR 50.72 reports serve. Since the issue impacted the regulatory process, it was dispositioned through the Traditional Enforcement process. The inspectors determined that this issue was a Severity Level IV violation based upon Example 6.d.9 in the NRC Enforcement Policy. Example 6.d.9 specifically states, "The licensee fails to make a report requirement by 10 CFR 50.72 or 10 CFR 50.73."

The inspectors evaluated the technical issue associated with the loss of the TSC ventilation make-up train in accordance with IMC 0612, Appendix B, and did not identify a performance deficiency that led to the unexpected damper failure.

Because a more-than-minor Reactor Oversight Process finding was not identified, there was no cross-cutting aspect associated with this violation.

Enforcement: Title 10 CFR Part 50.72(b)(3), "Eight-hour reports," requires, in part, that "If not reported under paragraphs (a), (b)(1) or (b)(2) of this section, the licensee shall notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any of the following...(xiii) any event that results in a major loss of emergency assessment capability."

Contrary to the above, on October 16, 2013, the licensee failed to notify the NRC within eight hours of a major loss of emergency assessment capability when the TSC ventilation filtered make-up train was rendered non-functional by an unplanned equipment failure.

Corrective actions included the submittal of EN 49723 on January 14, 2014, and planned Reportability Manual revisions to address the difference in wording with NUREG-1022, Revision 3. Because the issue was entered into the licensee's CAP as IR 1598598, "Wording Differences Between NUREG-1022 and Reportability Manual," and IR 1608133, "ENS Call Made Due to TSC Ventilation Impact in October 2013," the violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(Severity Level IV NCV 05000456/2013005-03; 05000457/2013005-03 Failure to Submit a Report Required by 10 CFR 50.72(b)(3)(xiii))**

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of July 1 through December 31, 2013, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule (MR) assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted one semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings were identified.

Based on their review of the licensee's CAP, the inspectors noted a number of examples where issues identified were not promptly entered into the CAP for resolution. Because individuals who identify a potential issue in the plant may not possess a broader understanding of the possible impact on equipment operability or functionality, prompt initiation of IRs is important. Once written, IRs are reviewed by the Shift Manager for potential impacts to operability or functionality. Additionally, Operations must be promptly made aware of potential degraded equipment or facility conditions in the event such equipment or facilities must be relied upon to mitigate an unplanned condition. The following are several of the examples identified by the inspectors where an IR was not promptly written:

- IR 1519660, discovered on May 16 and written on May 30, described a lack of sufficient detail in log entries to capture the activities that occurred on shift.
- IR 1564157, discovered on September 19 and written on September 26, described an oil leak that resulted in emergent SAC unavailability.
- IR 1574664, discovered on October 18 and written on October 21, described a stud that broke when reinstalling a flood hatch, which raised questions about flood hatch functionality.

- IR 1580874, discovered on October 25 and written on November 4, described a replacement hydramotor associated with an EDG damper that failed upon installation in the plant.
- IR 1581388, discovered on November 4 and written on November 5, described a hydramotor installed in the plant that was very hot and could cause a fire.
- IR 1598598, discovered on October 16 and written on December 18, described a difference in the wording between NUREG-1022, Revision 3 and the Exelon Reportability Manual.

The licensee entered this observation into their CAP as IR 1603664, "NRC ID'd Trend in Timeliness of IR Generation," dated January 3, 2014. The licensee also assigned a Common Cause Analysis in IR 1603664 and issued a site-wide generic communication regarding the need to follow site CAP procedures.

.4 Selected Issue Follow-Up Inspection: Residual Heat Removal (RH) Pump Net Positive Suction Head Concerns During Mid-Loop Operation

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting the potential for RH flow vortexing during mid-loop operations. Specifically, Calculation RH-94-HSK-01 stated that sufficient net positive suction head is available for RH flows below 4,000 gallons per minute (gpm). The inspectors discussed the issue with Operations and Engineering staff, who indicated that site procedures provide RH flow limitations such that the conditions that would result in vortexing concerns would not be present. The inspectors reviewed site procedures, particularly procedure BwOP RC-4, "Reactor Coolant System Drain," and confirmed that a Note in Step 40 and guidance in Step 42 restricted RH flow to within a flow band of 1,000 gpm to 3,000 gpm, which was well below the 4,000 gpm flow at which vortexing becomes a concern.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report (LER) 05000456/2013-001-00, Inadequate Operability Determination Procedure Guidance Results in Inadvertent Missed Technical Specification Action for Diesel Generator

The inspectors reviewed LER 05000456/2013-001-00, which was submitted on September 30, 2013. On August 1, 2013, a through-wall leak was identified on an Essential Service Water (SX) return line elbow from the 1A EDG. The LER documented the failure to properly determine that operability of the 1A SX and 1A EDG could not be supported and the subsequent failure to enter TS 3.7.8 and 3.8.1, as required.

Specifically, ASME Code Case 513-3 was initially applied and later determined to not be applicable to this particular leak. On August 2, the 1A SX train and 1A EDG were declared inoperable and TS 3.7.8 and 3.8.1 were entered. Weld repairs were completed and operability was supported on August 3, 2013.

The inspectors identified a licensee-identified violation which is documented in Section 4OA7 of this inspection report. This LER is closed.

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

4OA5 Other Activities

.1 Licensee Strike Contingency Plans (92709)

a. Inspection Scope

Due to the fact that the International Brotherhood of Electrical Workers (IBEW) Local 15 contract affecting the site was scheduled to expire on December 31, 2013, and that in the absence of an agreement the inspection was needed to ensure the continued safe operation of the facility, the inspectors reviewed the licensee's work stoppage plans to determine if the plans adequately addressed the areas of reactor operations, emergency planning, facility security, fire protection, TSs, and other regulatory requirements in the event of an employee strike or management lockout. The inspectors reviewed records and conducted interviews with licensee staff to verify that qualified personnel would be available to meet the minimum requirements for safe operation of the plant, if a strike or lockout were to occur. No actual work stoppage occurred during the inspection period.

b. Findings

No findings were identified.

.2 (Closed) URI 05000456/2012005-06; 05000457/2012005-06, Concerns with the Bases for the Acceptability of GOTHIC for Void Transport Prediction

The NRC documented a URI in NRC Inspection Report 05000456/2012005; 05000457/2012005 involving the use of computer software GOTHIC to justify the acceptability of a design basis change which incorporated gas voids in the suction piping from the containment emergency sump into the design of the plant. Specifically, the licensee identified unventable sections at the suction piping downstream of the SI8811 and CS009A valves. As a result, the licensee evaluated the acceptability of incorporating a maximum potential void size value into their licensing and design bases and justified this maximum value using GOTHIC. However, the inspectors noted instances where the basis of GOTHIC as a void assessment analysis tool was questionable. Specifically, the inspectors noted several differences between test and actual plan configurations and conditions, which were discussed in NRC Inspection Report 05000456/2011002; 05000457/2011002. This issue was unresolved pending further review by the NRR on the use of GOTHIC to justify the acceptability of this design bases change.

During this inspection period, NRR personnel reviewed design basis documents and engineering evaluations associated with this application of GOTHIC. The result of this

review was documented in "Completion of Reactor Systems Branch Assessment of Open Issues Related to Byron Station, Units 1 and 2, NRC Integrated Inspection Report 05000454/2011002; 05000455/2011002 (ML12289A022)." Although this report referenced a URI opened at Byron Nuclear Station, it was applicable to Braidwood because the questions and relevant configurations and conditions associated with Byron's URI were identical to Braidwood's URI. The report concluded that, although the GOTHIC verification was weak due to the limited comparisons to experimental data, no regulatory concerns were identified with the use of GOTHIC for analysis of the void in the piping from the containment sump. The main factors supporting this conclusion included:

- Pump inlet void fractions and volumes predicted by GOTHIC were increased to account for potential prediction error in design basis applications (i.e., an acceptable safety factor was applied).
- Generally accepted modeling methodologies were used in the GOTHIC predictions.
- Conservative and bounding system geometry was used in the GOTHIC modeling.
- GOTHIC predicted results were consistent with simplified methodologies.

The conclusions stated in the NRR's report are only applicable to the reviewed void susceptible locations under the reviewed physical and operational configurations and conditions.

Based on the above, the inspectors determined that no performance deficiencies or violations of regulatory requirements were associated with this URI. Documents reviewed are listed in the Attachment. This URI is closed.

.3 (Closed) URI 05000456/2013002-04; 05000457/2013002-04, Boric Acid Transfer Pump Electrical Power Supply Non-Safety Grade

The NRC documented a URI in Section 1R04 of NRC Inspection Report 05000456/2013002; 05000457/2013002 regarding the crediting of nonsafety-related equipment to meet design basis requirements. Braidwood Station is licensed to the standards of NRC Branch Technical Position Reactor Safety Branch 5-1, "Design Requirements of the Residual Heat Removal System," Revision 2, dated July 1981. One aspect of these licensing and design requirements is that the plant can be transitioned from normal operating condition to cold shutdown using only safety-related systems. Braidwood Station credits the boric acid transfer pumps in accomplishing the boration function necessary to reach cold shutdown conditions, however, the boric acid transfer pumps are powered by nonsafety-related electrical equipment. This issue was unresolved pending a detailed review of the current licensing basis.

The inspectors subsequently reviewed current licensing basis documents and discussed the issue with staff from the Office of Nuclear Reactor Regulation. Based on their document review and licensing discussions, the inspectors concluded that sufficient information regarding the electrical power lineup for the boric acid transfer pumps was

included in the approved Safety Evaluation Report. Since sufficient information was available for review during plant licensing, no findings or violations were identified.

This URI is closed.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 8, 2014, the inspectors presented the inspection results to Mr. M. Kanavos, Site Vice President, 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 radiological hazard assessment and exposure controls; occupational ALARA planning and controls; and occupational exposure control effectiveness performance indicator verification with Ms. M. Marchionda, Plant Manager, on December 20, 2013.
- The closure of URI 05000456/2012005-06; 05000457/2012005-06 with Mr. M. Kanavos, Site Vice President, and other members of the licensee's staff via telephone on December 20, 2013.

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.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

- Braidwood TS 3.7.8, "Essential Service Water System," states, in part, that two unit-specific SX trains shall be operable. Technical Specification 3.8.1, "Alternating Current (AC) Sources Operating," states, in part, that two EDGs capable of supplying the onsite Class 1E AC electrical power distribution shall be operable. If one unit specific SX train is inoperable, Condition A of TS 3.7.8 requires the licensee to enter the applicable conditions of TS 3.8.1 for the EDG made inoperable by the inoperable SX train.

Contrary to the above, on August 1, 2013, the licensee failed to properly determine that operability of the 1A SX and 1A EDG could not be supported and subsequently failed to enter TS 3.7.8 and 3.8.1, as required. Specifically, the licensee initially applied ASME Code Case 513-3 after identifying a pinhole leak on an elbow fitting on the SX return isolation line from the 1A EDG and

concluded that the SX train was operable. However, upon re-evaluation, the licensee identified that operability in accordance with ASME Code Case 513-3 was limited to straight pipe and not elbow fittings. On August 2, 2013, the licensee declared the 1A SX train and 1A EDG inoperable and entered TS 3.7.8 Condition A; TS 3.8.1 Condition B; and Technical Requirements Manual 3.0.c. Weld repairs were completed and operability was supported on August 3, 2013.

The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance and Configuration Control attributes of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors screened the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," answered 'No' to all of the Mitigating System Screening questions, and determined the finding was one of very low safety significance (Green). This issue was entered into the licensee's CAP as IR 1542372, "Essential Service Water Piping Leak - 1SX27DA," dated August 1, 2013. As part of the licensee's corrective actions, Operability Determination procedure OP-AA-108-115 was planned to be revised to provide clearer guidance regarding the application of ASME Code Case 513-3.

- Technical Specification 5.4.1 requires that written procedures shall be established, implemented, and maintained for procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Section 7.e.2 includes implementation of the Radiation Survey Program. Procedure RP-AA-503, "Unconditional Release Survey Method," required, in part, that materials have no detectable radioactivity for unconditional release from the site. Contrary to the above, on September 17, 2013, a Radioactive Shipping Specialist discovered that nine sample bottles containing radioactivity above minimal detectable activity for Co-58, Co-60 and Cs-137 were unconditionally released and shipped by the licensee's warehouse staff to a licensed facility without proper authorization from RP Management. All sample bottles were accounted for and secured at the licensed facility on September 16, 2013. The licensee investigation determined that the shipment of the sample bottles did not leak or cause contamination during the shipment. This event was entered into the licensee's CAP as IR 1560642, "Radioactive Oil Samples Shipped From Site Without RP Shipper Review," dated September 18, 2013. The RP department immediately stopped work and retrained the RP staff. The significance of the finding was determined by using IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process." The issue was determined to be of very low safety significance (Green) because it involved radioactive material control, was not a finding involving transportation, and did not result in public exposure greater than 0.005 rem.

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

Nuclear Regulatory Commission

E. Duncan, Chief, Reactor Projects Branch

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000456/2013005-01; 05000457/2013005-01	NCV	Failure to Maintain Accurate Operator Logs (Section 1R22.2b)
05000456/2013005-02; 05000457/2013005-02	NCV	Failure to Follow Procedure and Technical Specification Associated with Control for High and Locked High Radiation Areas (Section 2RS1.6b)
05000456/2013005-03; 05000457/2013005-03	NCV	Failure to Submit Report Required by 10 CFR 50.72(b)(3)(xiii) (Section 4OA2.2b)

Closed

05000456/2013003-03; 05000457/2013003-03	URI	Implications of Control Room Ventilation Monthly Surveillance (Section 1R22.2a)
05000456/2013-001-00	LER	Inadequate Operability Determination Procedure Guidance Results in Inadvertent Missed Technical Specification Action for Diesel Generator (Section 4OA3.1)
05000456/2012005-06; 05000457/2012005-06	URI	Concerns with the Bases for the Acceptability of GOTHIC for Void Transport Prediction (Section 4OA5.3)
05000456/2013002-04; 05000457/2013002-04	URI	Boric Acid Transfer Pump Electrical Power Supply Non- Safety Grade (Section 4OA5.4)

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.

1R04 Equipment Alignment

- IR 1192263; 2CS035B Has Dry Boric Acid Packing Leak Deposit; March 18, 2011
- IR 1378706; Dry Boric Acid on Drain Line Opening (2WE81AB); June 1, 2012
- IR 1553263; Dry Boric Acid at the Valve Packing on 2CS010B; August 30, 2013
- BwOP CS-M2; Operating Mechanical Lineup Unit 2; Revision 8
- BwOP DG-E1; Electrical Lineup – 1A Diesel Generator; Revision 7
- BwOP DG-M1; Operating Mechanical Lineup – 1A DG; Revision 17
- WR 404700; Dry Boric Acid on Drain Line Opening (2WE81AB); June 18, 2012
- Drawing M-129; Diagram of Containment Spray; Sheets 1A and 1B

1R05 Fire Protection

- IR 1532849; Fyrquel Leak on Fitting – 2MS001A-B; July 6, 2013
- IR 1534859; 2A MSIV Fyrquel Leak – 2MS001A-B; July 12, 2013
- Braidwood Pre-Fire Plan 204; AB 377' Unit 2 Main Steam & AF Pipe Tunnel (FZ 18.3-2)
- Braidwood Pre-Fire Plan 100; AB 346' Unit 1 Aux Bldg General Area (NE)
- Braidwood Pre-Fire Plan 101; AB 346' Unit 2 Aux Bldg General Area (South)
- Braidwood Pre-Fire Plan 102; AB 346' Aux Bldg General Area (SE)
- Braidwood Pre-Fire Plan 111; AB 364' Aux Bldg General Area (Center)
- Braidwood Pre-Fire Plan 112; AB 364' Unit 1 Aux Bldg General Area (North)
- Braidwood Pre-Fire Plan 113; AB 364' Unit 2 Aux Bldg General Area (South)
- Braidwood Pre-Fire Plan 156; AB 426' Aux Bldg General Area - Center
- Braidwood Pre-Fire Plan 157; AB 426' Unit 1 Aux Bldg General Area - North
- Braidwood Pre-Fire Plan 158; AB 426' Unit 2 Aux Bldg General Area – South
- Braidwood Fire Protection Report
- Pre-Fire Plan #98, AB 346', Auxiliary Bldg General Area (Center), Rev. 0 (Fire Zone 11.2-0)
- Pre-Fire Plan #99, AB 346', Auxiliary Bldg General Area (North), Rev. 0 (Fire Zone 11.2-0)
- Pre-Fire Plan #101, AB 346', Auxiliary Bldg General Area (South), Rev. 0 (Fire Zone 11.30)
- Pre-Fire Plan #111, AB 364', Auxiliary Bldg General Area (Center), Rev. 0 (Fire Zone 11.30)
- Pre-Fire Plan #112, AB 364', Auxiliary Bldg General Area (North), Rev. 0 (Fire Zone 11.3-0)
- Pre-Fire Plan #113, AB 364', Auxiliary Bldg General Area (South), Rev. 0 (Fire Zone 11.3-0)
- Pre-Fire Plan #165, AB 426', Auxiliary Bldg Laundry Room, Rev. 0 (Fire Zone 11.6C-0)
- MA-AA-716-026, Housekeeping, Revision 10

1R11 Licensed Operator Regualification Program

- LORT Training Scenario, October 23, 2013

1R12 Maintenance Effectiveness

- IR 1420992; Safety – U2 Station Air Receiver CO Alarm – MCR Distraction; October 1, 2012
- IR 1422421; Need Engineering Review of 1" Gate Valve Replacement; October 4, 2012
- IR 1459709; Valve 2SA141C Leaks-By; January 7, 2013

- IR 1459713; 2SA147C Leaks-By; January 7, 2013
- IR 1461681; 2AIS-SA017 – Unit 2 CO Analyzer Needs to be Replaced; January 11, 2013
- IR 1465279; Replace Unit 2 SAC OME Filter Elements; January 22, 2013
- IR 1471668; Unit 0 Service Air Receiver CO Content High; February 5, 2013
- IR 1485805; Pin Hole Leak in After Cooler on 2SA01C; March 11, 2013
- IR 1486803; Unit 1 Station Air Receiver CO High Annunciator (1AIS-SA017); March 12, 2013
- IR 1501169; U1 SA Receiver CO Alarm – 1AIS-SA017; April 12, 2013
- IR 1501267; U2 SA Receiver CO Alarm – 2AIS-SA017; April 12, 2013
- IR 1508230; 2SA032 Not in Normal Line Up Position; April 30, 2013
- IR 1511908; 1SA032 Would Not Open During Valve Stroke Surveillance; May 9, 2013
- IR 1532691; B4 Trend Code: OTS-SA060 Found OOT; July 3, 2013
- IR 1532697; 0SA01C Aux Oil Pump Would Not Start During BwOP SA-8; July 5, 2013
- IR 1532858; Power Supply Not Replaced During SAC Window – U0 SAC; July 3, 2013
- IR 1536332; Unit 0 SAC Operating Setpoints Changed – 0SA01C; July 16, 2013
- IR 1549524; SA Receiver CO Content High Alarm – 0AIS-SA017; August 22, 2013
- IR 1551758; -0IA136 – Unit 0IA Dryer Bypass Valve – Installed Improperly; August 28, 2013
- IR 1551872; SA Receiver – CO Content High Alarm Received – 0AIS-SA017; August 29, 2013
- IR 1552199; Enhance TRP – 0AIS-SA017; August 29, 2013
- IR 1552201; TRP Needs Enhancement – 1AIS-SA017; August 29, 2013
- IR 1552204; TRP Needs Enhancement – 2AIS-SA017; August 29, 2013
- IR 1555262; U1 SA Receiver Drain Trap Constantly Blowing Air; September 7, 2013
- IR 1555627; U0 SA Receiver CO Content High Alarm Received – 0AIS-SA017; Sept 9, 2013
- IR 1558703; Abnormal Oil Sample on U1 Station Air Comp Motor Bearings; Sept 14, 2013
- IR 1560810; Received Annunciator 0-39-B2, SAC 2 Trouble; September 19, 2013
- IR 1561073; U1 SAC Operating at 92 psig, System Pressure 110 psig; September 19, 2013
- IR 1561454; U2 SA Receiver 2 CO Content High Alarm; September 20, 2013
- IR 1562780; Unit 2 SAC Inboard Motor Bearing Oil Level Out of Sight Glass; Sept 23, 2013
- IR 1563800; Slight Oil Leak on 1SA01C Sight Glass; September 26, 2013
- IR 1574384; Received “SA Receiver 0 CO Content High” Alarm – 0AIS-SA017; Oct 20, 2013
- IR 1574387; SA Receiver 1 CO Content High Alarm – 1AIS-SA017; October 20, 2013
- IR 1574730; Generate EACE Assignment for Unit 2 SAC Failure – 2SA01C; October 21, 2013
- IR 1580560; 1A CV Pump Inner Motor Bearing Oil Level Low; November 4, 2013
- IR 1580589; PRT Pressure Unexpected Rise; November 4, 2013
- IR 1580648; PORV Battery Contamination; November 4, 2013
- IR1580801; Incorrect Measurement Recorded in MS PORV Surveillances; November 4, 2013
- ER-AA-310; Implementation of the Maintenance Rule; Revision 9
- LS-AA-120; Issue Identification and Screening Process; Revision 15
- LS-AA-125-1002; Common Cause Analysis Manual
- LS-AA-125-1004; Effectiveness Review Manual; Revision 5
- LS-AA-125; Corrective Action Program Procedure; Revision 17
- WO 0446142; SA Receiver 1 CO Content High Alarm – 1AIS-SA017; October 21, 2013
- Drawing M-54; Unit 1 & 2, Diagram of Service Air; Sheets 1A, 1B, 2, 4A, and 5
- Drawing M-55; Diagram of Instrument Air; Sheets 1 and 15

1R13 Maintenance Risk Assessments and Emergent Work Control

- IR 1599312; 1SX052B Would Not Isolate JW Scope Removed from 1B DG Window; December 17, 2013
- 1B EDG Protected Equipment; 1B DG Work Window; December 2013
- Unit 2 SAC – Protected Equipment; October 2013
- 0A VC Work Window – Protected Equipment; November 2013

1R15 Operability Evaluations

- 1R1599180; 1FW009D N2 Leak Effect on Valve Operability; December 7, 2013
- IR 1585114; NRC Questions on OP EVAL 13-004, November 14, 2013
- CC-AA-112; Temporary Configuration Changes; Revision 20
- CC-MW-112-1001; TCCP Installation/Removal Instructions and Test Requirements (EC 396360); Revision 12
- EC 396360; Design Consideration Summary
- LS-AA-104-1003; Installation of Temporary Nitrogen Feed to Maintain 1FW009D Pneumatic Pressure; Revision 0
- OP-AA-101-113-1004; Event/Issues Report Format 1FW009D; Revision 26
- WO 1695671 11; Build/Install Temporary Nitrogen Supply Rig Per 50.59 BRW-S-2013-176
- WO 1695671 13; Pressure Regulator Dedication Test of CID# 1101781-2
- Commercial Grade Dedication Requirements; Cat ID: 1101781-2; Pressure Regulator; Revision 0
- Drawing 38971-1; Spec L-2874 Operator Pneumatic/Hydraulic Unit 1&2; Sheet 1 and 2
- Drawing 80210; Feedwater Isolation Valve – 16X0X16, 900 Lb. Carbon Steel; May 12, 1995
- Drawing M-36; Feedwater (Main) Unit 1; Sheet 1B
- Drawing 20E-1-4030FW21; Steam Generator 1D Feedwater Isolation Valve 1FW009D (HOV); February 9, 1978
- IR 1549192; Open Questions on Performance of RH Relief Valve, August 21, 2013
- Op Eval 13-004; Hydrodynamic Analysis of RH Suction Relief to Boric Acid Relief Header, Revision 0
- NES-MS-03.2; evaluation of Discrepant Piping and Support Systems, Revision 6
- OP-AA-108-115; Operability Determinations, Revision 11

1R19 Post-Maintenance Testing

- IR 1600101; Failed PMT for 1B DG Overspeed Butterfly; December 21, 2013
- 1BwOS DG-2B; 1B Diesel Generator Overspeed Trip Test; Revision 3
- 1BwOS DG-4b; 1B Diesel Generator Isolate Switch Functional Test; Revision 1
- 1BwOSR 3.8.1.2-2; 1B Diesel Generator Operability Surveillance; Revision 35
- 1BwOSR 3.8.1.14-2; 1B Diesel Generator 24 Hour Endurance Run; Revision 5
- BwVS 900-8; Diesel Generator Engine Analysis; Revision 11
- WO 1367231 01; 1PL08J Perform DG Isolate Switch Testing; December 21, 2013
- WO 1438287-20; EC 384165 (Revision 000) Modification Test: Acceptance of Vacuum Breaker Valve on Unit 1 Auxiliary Feedwater Standpipe; Revision 2
- WO 1535343 03; MM-Perform 2 Year Inspection of Diesel Generator; December 21, 2013
- WO 1535343 31; MM-Perform 2 Year Inspection of Diesel Generator; December 23, 2013
- WO 1536210 01; 1B Diesel Generator Overspeed Trip Test; December 21, 2013
- WO 1695337 01; IST-1B DG Operability Monthly; December 21, 2013
- 50.59 Screening BRW-S-2011-118; EC 384165, Installation of Air/Vacuum Breaker Valve on Unit 1 AF Standpipe; Revision 0
- NRC Interaction Summary; PMT Testing from 1B EDG Work Window; December 23, 2013

1R22 Surveillance Testing

- IR 1509323; 2A DG 6R Explosion Cover Leak – 2DG01KA; May 2, 2013
- IR 1591865; Possible U1 Rod Drive Fuses Blown; December 2, 2013
- IR 1592000; Ineffective IR Screening; December 2, 2013
- BwOP AF-7; Auxiliary Feedwater Pump B (Diesel) Startup on Recirc; Revision 40

- 1BwOSR 3.1.4.2; Moveable Control Assemblies Surveillance; Revision 24
- 2BwOSR 3.7.5.4-2; Diesel Driven Auxiliary Feedwater Pump Surveillance; Revision 23
- 2BwOSR 3.8.1.2-1; 2A Diesel Generator Operability Surveillance; Revision 36
- 2BwOSR 3.8.1.14-1; 2A Diesel Generator 24 Hour Endurance Run; Revision 5
- 1BwOSR 5.5.8.AF-3B; Revision 13
- 2BwOSR 5.5.8.CV-4B; Group A IST Requirements for 2B Centrifugal Charging Pump (2CV01PB) and Check Valve 2CV8480B Stroke Test; Revision 7
- MA-AA-793-044; Portable Pressure Equipment Calibration Data Sheet (Typical); Revision 4
- WO 1507184 01; 2A Diesel Generator 24 Hour Endurance Run 18 Month; October 10, 2013
- WO 1599837 03; Inspect AF Diesel Engine Air Filters & Flex Hoses; November 14, 2013
- WO 1668150 01; IST for 2CV8481A/8480A/8480B ASME Surveillance Requirements for 2CV01PB; October 21, 2013
- WO 1669847 01; IST – SX174/8, AF001B/3B – 2AF01PB ASME Quarterly Surveillance; November 15, 2013
- WO 1671606 01; IST – 2A DG Operability Monthly; October 10, 2013
- WO 1678218 01; U1 Moveable Control Assemblies Quarterly Surveillance; December 3, 2013
- WR 432523; 2A DG 6R Explosion Cover Leak – 2DG01KA; May 2, 2013
- Drawing 1065E71; Solid State Rod Control Power Cabinets; Sheet 3
- Westinghouse Power Cabinet Layout
- RD-6; Digital Rod Position Ind; October 2, 2008, Revision 7
- RD-7; Rod Drive Notes; October 6, 2009, Revision 9
- RH-1a; Cold/Hot Recirc; December 8, 2006, Revision 0
- 0BwOSR 3.7.10.1-1; Unit Common Control Room Ventilation Filtration Surveillance; Revision 10
- HU-AA-104-101; Procedure Use and Adherence; Revision 4
- OP-AA-108-101; Operating Narrative Logs and Records; Revision 8
- OP-AA-102-104; Unit 1 & Unit 2 Standing Order – Corrections to Electronic Log Entries; November 4, 2013
- 2BwOSR 3.3.5.1-2; Bus 242 Undervoltage Protection Monthly Surveillance, Revision 2

1EP4 Emergency Action Level and Emergency Plan Changes

- EP-AA-1000; Standardized Radiological Emergency Plan; Revision 22 and 23
- EP-AA-1001; Radiological Emergency Plan Annex for Braidwood Station; Revision 29, 30, and 31
- EP-AA-110-200; Dose Assessment; Revision 5
- EP-AA-110-201; On Shift Dose Assessment; Revision 1

1EP6 Drill Evaluation

- IR 1564333; (OSP) 1FW076 Does Not Fully Open; September 27, 2013
- IR 156741; Troubleshoot/Repair 1FW076 During the Next S/U FW PP Window; September 30, 2013
- IR 1592543; NRC-IDNS Questions on Oct/Nov PI Drill Set; December 3, 2013
- IR 1596911; Braidwood PI Drill TSC Demonstration Criteria Failures; December 13, 2013
- 1BwFR-H.1; Response to Loss of Secondary Heat Sink; Revision 205 WOG 2
- Braidwood Oct/2013 PI Drill Scenario
- WO 1319443-0; EM 1AP10E Verification of Time Delay Relay 1-RCF3, November 18, 2013
- WO 1319443-02; OP PMT Functional Test 1AP10E 1-RCF3 (1C RCFC Time Delay), November 18, 2013
- IR 1586702; 1VP01CC Response Time Exceeds Admin Limit, November 18, 2013

- MA-BR-722-210; Calibration of Time Delay Relays, Revision 9
- 1BwOSR 3.6.6.7; Containment cooling Fan Automatic Actuation Test, Revision 4

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- IR 1551291; Rad Material from Vendor Arrived Over the Limit and Damaged; August 27, 2013
- IR 1559430; ED Dose Rate Alarm Received by Wesdyne Contractor Personnel; September 15, 2013
- IR 1556252; NOS Identified ALARA Concern with RAM Staged in Fuel Handling Building; September 9, 2013
- IR 1556645; Behavioral Correction on Doffing of Protective Clothing; September 10, 2013
- IR 1556797; Individual Entered Containment Without Electronic Dosimeter; Sept 9, 2013
- IR 1557854; Changes in Dress Out Not Communicated; September 12, 2013
- IR 1557887; Inadequate Contamination Control in Fuel Handling Building; Sept 12, 2013
- IR 1558359; NOS Identified Workers' Lack of Understanding of the New Electronic Dosimeters Alarm Tones; September 13, 2013
- RP-AA-203-1001; Jenn17956; Individual Received Rate Alarm While Working on Scaffold S-1506; September 15, 2013
- RWP-10015039; A1R17; CRDM Vent Line Volumetric Exam-PT Penetration 69 and All Associated Work; Revision 1
- RP-AA-460; Control for High and Locked High Radiation Areas; Revision 23
- RP-AA-503; Unconditional Release Survey Method; Revision 5
- RP-AA-210; Dosimetry Issue, Usage, and Control; Revision 22
- RP-AA-800; Semi-annual Source Leak Test and Inventory; Reviewed from May 2012 through June 2013
- NSTS; National Source Tracking System; Confirmation Form 2013 – Annual Inventory Reconciliation; January 22, 2013
- RWP-10015915; Reactor Head P-69 CRD Emergent Weld Repair A1R17; Revision 0
- RWP-10014981; ISI Exams (Including Weld Preps); Revision 1
- RWP-10014987; Engineering: Plant, Program, Rapid Response and Design in Aux/CNMT; Revision 1
- RWP-10014995; Valve Team Outage Activities in Unit 1 Containment; Revision 1
- RWP-10014973; Fuel Moves and Tri-Nuc Work; 426' Fuel Handling Building and Reactor Building Cavity; Revision 1

2RS2 Occupational ALARA Planning and Controls (71124.02)

- ALARA Plan RWP -10015039; A1R17; Emergent Reactor Head Repair (Repair to Repair Buffing /Stick Welding); September 14, 2013
- RP-AA-400-1006; Outage Exposure Estimating and Tracking; Revision 3
- RP-AA-401; Operational ALARA Planning and Controls; Revision 15
- ALARA Plan RWP-10015039; RP-AA-401; ALARA Briefing Checklist; September 19, 2013
- ALARA Plan RWP-10014981; ISI Weld Prep Exams in Aux/Containment; August 29, 2013
- ALARA Plan RWP-10014987; Engineering: Plant, Program, Rapid Response and Design in Aux/CNMT
- ALARA Plan RWP-10014973; Fuel Moves and Tri-Nuc Work; 426' Fuel Handling Building and Reactor Building Cavity
- ALARA Plan RWP-10014995; Valve Team Outage Activities in Unit-1 Containment; Revision 1

4OA1 Performance Indicator Verification

- Power Reduction Due to Issue with 1C RCP Motor Lower Radial Bearing; January 24, 2013
- Day Shift Log; Reactor Makeup System in Borate Mode/Batch Boration Method for Pending U1 Ramp; May 24, 2013

4OA2 Problem Identification and Resolution

- IR 1147309; 1CV02P-C, Active (100 DPM) CC Leak at Ht. Exchanger Flg.; December 1, 2010
- IR 1499679; Trend Core B1: Diff. Pres. Indicator 0PDI-VV449 OOT High; April 9, 2013
- IR 1515251; 0PDI-VV449 Pegged High After Calibration; May 17, 2013
- IR 1567422; 2B EDG Fire Damper Found Partial Dropped – 2VD17YB; October 3, 2013
- IR 1567498; Gaps Identified Between DG Rollup Doors and L-Line Wall; October 3, 2013
- IR 1568089; 1B EDG Room Exhaust Fire Damper ETL Beginning to Separate; Oct 3, 2013
- IR 1568090; 1B EDG Fire Damper 1VD17YB with ETL Beginning to Separate; Oct 3, 2013
- IR 1568092; 2A EDG Fire Damper 2VD24YB with ETL Beginning to Separate; Oct 3, 2013
- IR 1568093; 2B EDG Fire Damper ETL Beginning to Separate; October 4, 2013
- IR 1572994; TSC Make Up Fan Heating Coil High Temp Alarm; October 16, 2013
- IR 1590202; Max RHR Flow, Potential for Vortexing While at Mid-Loop; November 25, 2013
- IR 1594772; NRC/IEMA Question; December 6, 2013
- BwIS VV-1; Technical Support Center Ventilation System HEPA & Charcoal Filter Performance Test; Revision 1
- EC 395026; Operability Evaluation 13-005 PTLR Analysis Support Document Does Not Reflect RX Head Stud Configuration for Braidwood U2; August 27, 2013
- EC 395612; Evaluation of 1/2VD01CA/B Fan Operation Due to Failed ETL on One Fire Damper Curtain; Revision 0
- EC 395687; Op Eval 13-006 – Potential High Energy Line Crack Locations Identified in Auxiliary Feedwater Tunnel; October 15, 2013
- BwOP RC-4; Reactor Coolant System Drain; Revision 35
- OP-AA-108-115; Op Eval 13-005, IR 1549725; Support Document for Pressure and Temperature Limits Report Analysis Not Revised for Reactor Head Stud Configuration Change; Revision 11
- WC-AA-106; Work Request and Work Order Backlog Validation Process; Revision 13
- WO 1498973 01; Technical Support Center Vent Sys HEPA Filter Performance Test; October 16, 2013
- WO 96032786; CC LAK at Flange by the Oil Inlet; October 14, 2011
- WR 445736; TSC Make Up Fan Heating Coil High Temp Alarm (45)
- WR 451481; Repair 120 DPM CC Leak on Oil Cooler; December 17, 2013
- Drawing M-94; Diagram of TSC Ventilation System; Sheets 2 and 3

4OA3 Event Followup

- LS-AA-2140; Monthly Data Elements for NRC Occupational Exposure Control Effectiveness; Revision 5 and Data Element forms from January 2012 through August 2013

4OA5 Other

- EC 378161; Revise the Design Bases to Accept Potential Voided Piping Downstream of the 1/2CS009A Valves and the 1/2SI8811A/B Valves; October 22, 2010
- NAI-1459-001; Comparison of GOTHIC Gas Transport Calculations with Test Data; Revision 1
- Safety Evaluation by NRR Relating to Natural Circulation Cooldown; November 4, 1988

LIST OF ACRONYMS USED

AC	Alternating Current
ACE	Apparent Cause Evaluation
AF	Auxiliary Feedwater
ADAMS	Agencywide Documents Access Management System
ALARA	As Low As Is Reasonably Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
cm	centimeter
CRD	Control Rod Drive
CS	Containment Spray
CVCS	Chemical and Volume Control System
CY	Calendar Year
d/p	Differential Pressure
ED	Electronic Dosimeter
EDG	Emergency Diesel Generator
EICS	Enforcement and Investigations Coordination Staff
EN	Event Notice
ENS	Event Notification System
EPIP	Emergency Planning Implementing Procedure
gpm	gallons per minute
IBEW	International Brotherhood of Electrical Workers
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
LCO	Limiting Condition for Operation
LER	Licensee Event Report
mrem	Millirem
NCV	Non-Cited Violation
NDE	Non-Destructive Evaluation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSIR	Nuclear Security and Incident Response
PARS	Publicly Available Records System
PI	Performance Indicator
RP	Radiation Protection
RWP	Radiation Work Permit
SAC	Station Air Compressor
SDP	Significance Determination Process
SSC	Systems, Structures, and Components
SX	Essential Service Water
TS	Technical Specification

TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VC	Control Room Ventilation
WO	Work Order

M. Pacilio

-2-

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

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Sincerely,

/RA/

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

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SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NRC INTEGRATED
INSPECTION REPORT 05000456/2013005; 05000457/2013005

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