UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

August 9, 2012

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

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000456/2012003; 05000457/2012003

Dear Mr. Pacilio:

On June 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Braidwood Station, Units 1 and 2. The enclosed report documents the results of this inspection, which were discussed at an exit meeting on July 5, 2012, with Mr. D. Enright 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.

Four NRC-identified findings of very low safety significance (Green) were identified during this inspection. Two of these findings were determined to involve a violation of NRC requirements. However, because of their very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these violations as Non-Cited Violations (NCVs) in accordance with Section 2.3.2 of the NRC's Enforcement Policy. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

If you contest 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.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and to the Resident Inspector Office at the Braidwood Station.

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

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000456/2012003; 05000457/2012003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-456; 50-457
License Nos:	NPF-72; NPF-77
Report No:	05000456/2012003; 05000457/2012003
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Station, Units 1 and 2
Location:	Braceville, IL
Dates:	April 1 through June 30, 2012
Inspectors:	J. Benjamin, Senior Resident Inspector A. Garmoe, Resident Inspector T. Go, Health Physicist M. Holmberg, Reactor Engineer R. Ng, Project Engineer A. Shaikh, Reactor Inspector R. Walton, Senior Operations Engineer M. Perry, Resident Inspector Illinois Emergency Management Agency (IEMA) B. Metrow, Inspector, IEMA
Approved by:	E. Duncan, Chief Branch 3 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000456/2012003, 05000457/2012003; 04/01/2012 – 06/30/2012; Braidwood Station, Units 1 & 2; Adverse Weather Protection; Inservice Inspection Activities; Operability Determinations & Functionality Assessments.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors. Two of these findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Assisgned cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Area." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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: Initiating Events

- Green. The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to implement adverse weather Abnormal Operating Procedures (AOPs) when entry conditions were present. Specifically, the site was not aware of a severe thunderstorm warning that had been issued for the area on May 6, 2012, and did not implement site procedures that directed actions to be taken upon adverse weather conditions. In addition to entering the issue in the Corrective Action Program (CAP) as Issue Report (IR) 1364132, corrective actions included ensuring access to the National Weather Service website for Operations personnel, and implementation of additional weather alert notification tools.

  The performance deficiency was determined to be more than minor because it could be reasonably viewed as a precursor to a significant event in that the failure to implement the adverse weather AOPs could result in the failure to take actions intended to minimize the potential for a Loss of Offsite Power (LOOP) when the likelihood is elevated by adverse weather conditions. The performance deficiency was also determined to be more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In accordance with IMC 0609, Attachment 4, Table 2, the finding was determined to affect the Transient Initiator Contributor (e.g. loss of offsite power) function of the Initiating Events Cornerstone. The inspectors answered 'No' to the Transient Initiator questions in IMC 0609, Attachment 4, Table 4a. As a result, the issue screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee's facilities were not adequate to ensure main control room personnel were aware of the severe thunderstorm warning (H.2(d)). (Section 1R01.2b)

- Green. A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50.55a(g)4 was identified by the inspectors when licensee personnel failed to establish an ultrasonic test (UT) examination procedure for steam generator primary manway bolts qualified in accordance with the American Society of Mechanical Engineers (ASME) Code, Section XI. Specifically, the licensee failed to determine a limit for maximum scan speed and incorporate this limit into the ultrasonic examination procedure applied to the steam generator primary side manway bolting. The licensee entered this issue into the CAP as IR 1359195 and performed a procedure performance demonstration to qualify the maximum scan speed allowed for the UT examination of manway bolts.

  The performance deficiency was determined to be more than minor because the issue, if left uncorrected, would become a more significant safety concern. Absent NRC identification, the absence of a scan speed could have allowed service induced cracks to go undetected. Undetected cracks would place the steam generator primary manway closure bolting at increased risk for failure, which would affect the pressure retaining integrity of the Reactor Coolant System (RCS) and pose an increased risk for through-wall leakage and/or failure. Because the licensee promptly corrected this issue before unacceptable flaws were returned to service, the inspectors answered 'No' to the Significance Determination Process Phase I screening question "Assuming worst case degradation, would the finding result in exceeding the Tech Spec [Technical Specification] limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function assuming the worst case degradation?" Therefore, this finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because the licensee did not implement conservative assumptions regarding a UT essential variable when creating the UT procedure and demonstrating that procedure. Specifically, the licensee staff failed to understand the significance of establishing a scanning speed into the UT procedure and recording the scanning speed during the procedure demonstration (H.1(b)). (Section 1R08.1b)

- Green. A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors when licensee personnel failed to accomplish corrective actions following identified boric acid leakage on a reactor head penetration. Specifically, the licensee did not adequately implement corrective actions involving cleaning and removal of boric acid deposits following identified boric acid leakage on Reactor Head Penetration No. 77. The licensee entered this issue into the CAP as IR 1359227 and performed a UT examination of the penetration to confirm that no leakage path existed and a post-cleaning visual examination to confirm no signs of gross degradation.

  The performance deficiency was determined to be more than minor because the issue was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operation. Specifically, the reactor head was returned to service without accomplishing corrective actions to remove all boric acid deposits from the Penetration No. 77 leakage. This resulted in boric acid deposits being left on the reactor head for one operating cycle and masking of potential surface indications from Penetration No. 77 leakage during the subsequent Bare Metal Visual (BMV)

examination. Because no gross visual degradation was observed during the BMV examination after cleaning of boric acid deposits and no leakage path was detected during the UT examination of Penetration No. 77 in the A1R16 outage, the inspectors answered 'No' to the SDP Phase I screening question "Assuming worst case degradation, would the finding result in exceeding the Tech Spec limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function assuming the worst case degradation?" Therefore, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Work Control component of the Human Performance cross-cutting area because the licensee did not appropriately plan the reactor work activity to repair and clean the mechanical connection on Penetration No. 77 by incorporating job site conditions including risk insights associated with potentially washing down boric acid deposits below the reactor head insulation onto the reactor head (H.3(a)). (Section 1R08.2b)

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to follow the Operability Determination process after identifying potential safety-related structural loading issues created by a postulated turbine building High Energy Line Break (HELB). Specifically, the licensee identified and addressed a very specific issue related to safety-related divisional separation wall loading concerns, but failed to adequately evaluate the extent to which a postulated current licensing basis (CLB) HELB condition could affect other Technical Specification (TS) and/or safety-related structures, systems, and components (SSCs) within the areas of concern. The licensee entered these issues into the CAP as IR 1382574 and IR 1389889. Corrective actions included performing a prompt operability determination associated with the issues raised by the inspectors. The licensee also planned to complete a formal revision to Operability Evaluation 2012-004 by July 24, 2012.

The performance deficiency was determined to be more than minor because it was similar to the "not minor if" aspect of Example 3.j in IMC 0612, Appendix E, "Examples of Minor Issues," since the issues identified by the inspectors resulted in a condition in which there was a reasonable doubt on the operability of the structures protecting TS components and systems that perform a TS function. The issues were dissimilar from the "minor because" aspect of the example since the impact of the issues were not minimal. In addition, the performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process", Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone. The inspectors answered 'No' to all of the Mitigating Systems Cornerstone questions in Table 4a of IMC 609 and, as a result, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because licensee personnel failed to use the Operability Determination process to evaluate the issues identified by the inspectors and therefore did not obtain interdisciplinary input to make an operability decision (H.1(a)). (Section R15.1b(1))

B. Licensee-Identified Violations

A violation of very low safety significance that was identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking number is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power for the duration of the inspection period with one exception. On April 15, 2012, Unit 1 was shut down for a scheduled refueling outage. Unit 1 was restarted on May 19, and synchronized to the grid that same day. Unit 1 reached full power on May 26.

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

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of the licensee's preparations for summer weather for selected systems, including conditions that could lead to an extended drought.

During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report. The inspectors also reviewed Corrective Action Program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one seasonal adverse weather sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition – Severe Thunderstorm Warning

a. Inspection Scope

The inspectors performed a review of the licensee's response to adverse weather conditions following a severe thunderstorm warning for the area on May 6, 2012. The inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors reviewed operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the UFSAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a

sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment.

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

b. Findings

Failure to Implement Abnormal Operating Procedures When Entry Conditions Were Present

Introduction: The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to implement adverse weather Abnormal Operating Procedures (AOPs) when entry conditions were present. Specifically, the site was not aware of a severe thunderstorm warning that had been issued for the area and did not implement site procedures that directed actions to be taken upon adverse weather conditions.

Description: On May 6, 2012, at 9:55 p.m. central daylight time, the National Weather Service issued Severe Thunderstorm Warning #0027 for southwestern Will County in northeast Illinois until 10:45 p.m. Braidwood Station is located at the southwestern corner of Will County. The warning noted that a severe thunderstorm would be near Braidwood, IL around 10:10 p.m. The warning was subsequently updated five times before expiring at the scheduled time. The inspectors were aware that the licensee had AOPs that addressed adverse weather conditions, specifically, 0BwOA ENV-1, “Adverse Weather Conditions Unit 0;” 1BwOA ENV-1, “Adverse Weather Conditions Unit 1;” and 2BwOA ENV-2, “Adverse Weather Conditions Unit 2.” During the inspectors’ routine review of main control room logs it was noted that the licensee did not implement the adverse weather AOPs after Severe Thunderstorm Warning #0027 was issued.

The inspectors reviewed the adverse weather AOPs and noted several entry conditions, including notification of a severe thunderstorm warning, meteorological tower wind speeds in excess of 40 miles per hour (mph), or a wind gust greater than or equal to 58 mph. The procedures were designed such that once procedure 0BwOA ENV-1 was entered based on symptoms or conditions, then Step 1 of BwOA-ENV-1 required entry into 1(2)BwOA ENV-1 for Unit-specific actions.

The inspectors determined through interviews with licensee personnel that the licensee was not aware that Severe Thunderstorm Warning #0027 had been issued. The licensee indicated that main control room operators were aware of storms in the area and were monitoring the station meteorological tower wind speed indication, which never rose to the threshold of entering the adverse weather AOPs. Additionally, a National Oceanic Atmospheric Administration (NOAA) weather radio was in the main control room and broadcasted automated alerts when severe thunderstorm warnings were issued for the Braidwood area. The licensee indicated that the radio was operating properly, but no one heard the alert for Severe Thunderstorm Warning #0027. The inspectors contacted the National Weather Service and confirmed the details of Severe Thunderstorm Warning #0027. This information was provided to the licensee and the issue was entered into the CAP as Issue Report (IR) 1364132.

The adverse weather procedures directed an assessment of online or shutdown risk, pre-emptive actions to be taken prior to the onset of adverse weather, and follow-up actions to determine if there had been an adverse impact on the site. The site's online risk model included an adverse weather input that could elevate online risk by one color as an acknowledgement of the increased potential for a loss of offsite power (LOOP). Pre-emptive actions included checking if the electrical ring bus was intact, eliminating threats to offsite power by removing loose equipment or material from the switchyard and transformer areas, and verifying the emergency diesel generators were properly aligned for standby operation. Follow-up actions included outdoor inspections for loose debris or damage, and thermography inspections of switchyard electrical connections.

As a result of not implementing the adverse weather AOPs when Severe Thunderstorm Warning #0027 was issued, the site did not re-evaluate the shutdown risk for Unit 1, the online risk for Unit 2, or take the pre-emptive actions prescribed by the adverse weather AOPs to minimize the potential for a LOOP. On May 7, after the issue was raised by the inspectors, the licensee added a late control room log entry that revised the Unit 2 online risk from Green to Yellow for the time period of the severe thunderstorm warning, re-evaluated the shutdown risk for Unit 1 and confirmed that it did not change, and performed the follow-up actions prescribed by the adverse weather AOPs. In addition to entering the issue in the CAP, the licensee ensured access to the National Weather Service website for Operations personnel and implementation of additional weather alert notification tools.

Analysis: The inspectors determined that the failure to implement adverse weather AOPs when entry conditions were present was a performance deficiency. Specifically, the site was not aware of a severe thunderstorm warning that had been issued for the area and did not implement site procedures that directed actions to be taken upon adverse weather conditions. The performance deficiency was screened in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency did not involve a violation that impacted the regulatory process or contribute to actual consequences. The inspectors reviewed the minor examples contained in IMC 0612, Appendix E, "Examples of Minor Issues," and were unable to resolve whether the issue was more than minor. Specifically, although Examples 4.a and 4.b identified that the failure to follow procedures with no actual safety consequence was minor, Examples 7.e and 7.f identified that the failure to perform a risk assessment that resulted in a higher risk category was more than minor. As a result, the inspectors reviewed the minor questions in IMC 0612, Appendix B. The inspectors determined that the performance deficiency could be reasonably viewed as a precursor to a significant event in that the failure to implement the adverse weather AOPs resulted in the failure to take actions intended to minimize the potential for a LOOP when the likelihood was elevated by weather conditions. The performance deficiency was also determined to be more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

In accordance with IMC 0609, Attachment 4, Table 2, the finding was determined to affect the Transient Initiator Contributor (e.g. loss of offsite power) function of the Initiating Events cornerstone. The inspectors answered 'No' to the Transient Initiators

questions in IMC 0609, Attachment 4, Table 4a. As a result, the finding screened as having very low safety significance (Green).

This finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee's facilities were not adequate to ensure main control room personnel were aware of the severe thunderstorm warning. Specifically, the weather radio volume may have been adjusted such that it could not be easily heard, the licensee did not have access to the National Weather Service website, and the licensee's internal weather website may not have displayed the severe thunderstorm warning (H.2(d)).

Enforcement: This finding did not involve enforcement action because no regulatory requirement was violated. **(FIN 05000456/2012003-01; 05000457/2012003-01, Failure to Implement Abnormal Operating Procedures When Entry Conditions Were Present)**

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Spent Fuel Pool Cooling System with Unit 1 Core Off-Loaded to the Spent Fuel Pool;
- Unit 1 Main Steam Isolation Valve (MSIV) System;
- Division 11, 120 Volt Direct Current System; and
- Division 12, 120 Volt Direct Current System.

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, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 11.6-0, AB 426', Unit 1 Auxiliary Building Area - North;
- Fire Zone 11.5a-0, AB 401', Radiological Instrument Calibration Room;
- Fire Zone 11.4A-2, AB 383', Unit 2 Auxiliary Feedwater Pump Room;
- Fire Zone 1.6E-0, AB 426', Hot Tool Storage Room;
- Fire Zone 16.1-1, Outside Unit 1 Refueling Water Storage Tank; and
- Fire Zone 11.6A-0, AB 426' Laboratory Heating, Ventilation, and Air Conditioning Equipment Room.

The inspectors reviewed these areas to assess if 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 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 the 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. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The licensee identified a low inventory margin condition in the station's ultimate heat sink (IR 1266679). The inspectors reviewed the licensee's assessment regarding this issue to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. The inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. The inspectors discussed the issue with licensee management and staff to ensure that the issue was effectively being managed within the CAP. Documents reviewed are listed in the Attachment.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08P)

From April 16, 2012, through May 8, 2012, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the Unit 1 Reactor Coolant System (RCS), steam generator tubes, emergency feedwater system, risk-significant piping and components, and containment systems.

The inspections described in Sections 1R08.1, 1R08.2, 1R08.3, 1R08.4, and 1R08.5 below constituted one inservice inspection sample as defined in IP 71111.08-05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors observed field activities and/or reviewed records of the following non-destructive examinations (NDEs) mandated by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements, and if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC-approved alternative requirement:

- Ultrasonic Testing (UT) of Steam Generator Manway Studs;
- UT of Dissimilar Metal Weld (1RV-01-026) Reactor Vessel Outlet Nozzle-to-Safe End Weld at the 202 Degree Azimuth;
- UT of Reactor Vessel Head Penetration Nozzle Nos. 2, 9, 16, 47, 55, and 69;
- UT of a Risk-Informed (R-A , R01.20) Pipe-To-Elbow Weld, 1RC-14-10/RC;
- UT of a Risk-Informed (R-A , R01.20) Elbow-To-Pipe Weld, 1RC-14-11/RC;
- UT of a Risk-Informed (R-A , R01.20) Pipe-To-Elbow Weld, 1RC-14-14/RC;
- Liquid Dye Penetrant (PT) Examination of CVCS [Chemical Volume Control System] Pipe-To-Elbow Weld, 1CV-01-15; and
- Bare Metal Visual (BMV) Examination of Reactor Head and Penetration Nozzles.

The inspectors reviewed the following volumetric and surface NDE with relevant indications that were evaluated and accepted by the licensee for continued service to determine if acceptance was in accordance with the ASME Code or an NRC-approved alternative:

- Unit 1 - 3/16 inch rounded indication in bottom head support skirt of 1RHX-01-1RHES-01 (residual heat removal “A” heat exchanger); and
- Unit 2 - Subsurface 0.7 inch (length) indication identified in mixing tee-to-pipe weld 2RH-03-28 (line 2RH03AA-8”);

The inspectors observed field activities and/or reviewed records of the following pressure boundary welds completed for risk-significant systems during the Unit 1 refueling outage to determine if the welding activities and any applicable NDE performed were completed in accordance with the ASME Code or an NRC-approved alternative:

- Welds FW-4, 4a, 25 and 25b on 4-inch diameter stainless pipe run line 1SI08CA/CB-4” fabricated under WO No.145074003 – (EC 385012) to add isolation valves upstream of valve 1SI-8801A.

b. Findings

Steam Generator Primary Manway Bolts Examined with Unqualified Procedure

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50.55a(g)4 was identified by the inspectors when licensee personnel failed to establish a UT examination procedure for steam generator (SG) primary manway bolts qualified in accordance with the ASME Code, Section XI. Specifically, the licensee failed to determine a limit for maximum scan speed and incorporate this limit into the UT examination procedure applied to the SG primary side manway bolting.

Description: On April 24, 2012, the inspectors observed the licensee performing a UT examination of the SG “C” manway studs (Section XI, Examination Category B-G-1,

Item B 06.90) and identified that UT procedure ISI-EXE-74 did not control the maximum scan speed (i.e., the speed that the UT probe travels over the bolt surface).

The inspectors were concerned that without controlling scan speed to within a demonstrated/qualified speed, the ability of the UT examination to detect flaws would be compromised.

There are numerous bolting applications in nuclear power plants. The most crucial which are those constituting an integral part of the primary pressure boundary, such as closure studs and bolts on reactor vessels, reactor coolant pumps, and steam generators. Failure of these bolts or studs could result in the loss of reactor coolant that could jeopardize the safe operation of the plants. As part of the resolution of Generic Safety Issue 29: Bolting Degradation or Failure in Nuclear Power Plants (NUREG-0933), the NRC reviewed 44 incidents of bolting failures or degradation at power reactor licensees. The principal causes of bolting failure or degradation were classified as stress corrosion, fatigue, boric acid corrosion, erosion corrosion, and other types. To ensure that degraded bolts can be identified prior to failure, the NRC requires licensees to implement an ISI program which includes UT or surface examination of studs or bolts in the RCS. As for the SG manway bolts, the procedure and equipment applied for UT examinations must be tested on a mockup sample containing a circumferentially oriented flaw at the outside diameter thread root to demonstrate the capability of detecting inservice flaws (e.g., fatigue or stress corrosion cracks). Further, the procedure used for this demonstration must control essential variables related to the UT instrument and configuration to provide assurance that the UT examination remains effective for detecting flaws. Specifically, the ASME Code Section XI, Appendix VIII, Article VIII-2000(d) required the examination procedure to specify essential variables including a maximum scan speed based upon the mockup demonstration. For vendor procedure EXE-UT-74, “Ultrasonic Examination of the Replacement Steam Generator Primary Manway Bolting at Byron and Braidwood,” the demonstration of this procedure was based upon a site-specific mockup demonstration conducted at Byron Station in March 2011.

The inspectors observed the vendor UT examiner conducting the UT examination in accordance with EXE-UT-74 on 3 of the 20 SG 1C cold leg primary manway bolts (ASME Code Section XI, Examination Category B6.90). The licensee’s vendor UT examiner moved the UT probe at a scan speed which was not measured or recorded. The inspectors identified that procedure EXE-UT-74, "Ultrasonic Examination of the Replacement Steam Generator Manway Bolting at Braidwood Unit 1 and Byron Unit 1," Revision 02, (with FCN-01) did not contain a requirement to limit the maximum UT probe scanning speed. Further, the inspectors identified that the mockup demonstration used to qualify this procedure had not recorded a UT probe scan speed. The inspectors were concerned that the failure to identify and limit the maximum allowed scanning speed could lead to a failure to detect service-induced cracks. This issue called into question the adequacy of the UT examinations of SG primary manway bolts at Byron Station and Braidwood Station completed using this procedure (e.g., after March of 2011).

The licensee entered these issues into the CAP as IR 1359195 and on April 26, 2012, performed another performance demonstration. The inspectors observed this demonstration to qualify UT Procedure EXE-UT-74, which served to establish a maximum allowable scan speed of 3 inches per second. The licensee stated that they

planned to use the maximum demonstrated scan speed on the mockup as a limit in Procedure EXE-UT-74. This issue was not an operability concern because the licensee had until the end of the current ASME Section XI Code interval (2018) to complete a qualified UT examination of these bolts.

Analysis: The inspectors determined that the licensee's failure to establish a UT examination procedure for SG primary manway bolts qualified in accordance with the ASME Code Section XI was a performance deficiency. The performance deficiency was screened in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency did not involve a violation that impacted the regulatory process or contribute to actual consequences. The performance deficiency was determined to be more than minor because, if the issue was left uncorrected, it would become a more significant safety concern. Specifically, absent NRC identification, the absence of a scan speed limit could allow service-induced cracks to go undetected. Undetected cracks would place the SG primary manway closure bolting at an increased risk for failure, which would affect the pressure retaining integrity of the RCS and pose an increased risk for through-wall leakage and/or failure.

In accordance with IMC 0609, Attachment 4, because the licensee promptly corrected this issue before unacceptable flaws were returned to service, the inspectors answered 'No' to the Significance Determination Process Phase I screening question, "Assuming worst case degradation, would the finding result in exceeding the TS limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function assuming the worst case degradation?" Therefore, this finding screened as having very low safety significance (Green).

This finding had a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because the licensee did not implement conservative assumptions regarding a UT essential variable when creating the UT procedure and demonstrating that procedure. Specifically, the licensee's staff failed to understand the significance of establishing a scanning speed into the UT procedure and recording the scanning speed during the procedure demonstration. The inspectors determined the primary cause of this finding based upon discussions with the licensee's NDE and ISI staff (H.1(b)).

Enforcement: Title 10 CFR 50.55a(g)4 required, in part, that throughout the service life of a boiling or pressurized water reactor facility, components which are classified as ASME Code Class 1, 2, and 3 must meet the requirements set forth in ASME Section XI.

The 2001 Edition, through 2003 Addenda of ASME Code Section XI, ASME Code Section XI, Appendix VIII, Article VIII-2000(d) required, in part, "The examination procedure shall specify the following essential variables…4)(b) maximum scanning speed."

Contrary to the above, as of April 25, 2012, Procedure EXE-UT-74, "Ultrasonic Examination of the Replacement Steam Generator Primary Manway Bolting at Byron and Braidwood," Revision 2, approved by the licensee on March 20, 2011, did not contain the maximum UT probe scanning speed. Consequently, 20 SG 1C cold leg primary manway bolts were examined with an unqualified UT examination procedure. The failure to establish a UT examination procedure for SG primary manway bolts qualified in accordance with the ASME Code Section XI was a violation of 10 CFR 50.55a(g)4. Because this violation was of very low safety significance and it

was entered into the licensee's CAP as IR 1359195, it is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.
(NCV 05000456/2012003-02, Steam Generator Primary Manway Bolts Examined with Unqualified Procedure).

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the Unit 1 reactor vessel head, a BMV examination and a non-visual examination were required this outage pursuant to 10 CFR 50.55a(g)(6)(ii)(D).

The inspectors reviewed video records of the BMV examination conducted on the reactor vessel head and penetration nozzles to determine if the activities were conducted in accordance with the requirements of ASME Code Case (CC) N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). Specifically, the inspectors determined:

- If the required visual examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with licensee procedures;
- If the licensee criteria for visual examination quality and instructions for resolving interference and masking issues were adequate; and
- For indications of potential through-wall leakage, whether the licensee entered the condition into the CAP and implemented appropriate corrective actions.

The inspectors observed field activities and/or reviewed data for non-visual examinations conducted on the reactor vessel head penetrations and the head vent line to determine if the activities were conducted in accordance with the requirements of ASME CC N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). Specifically, the inspectors determined:

- If the required examination scope (volumetric and surface coverage) was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures;
- If the UT examination equipment and procedures used were demonstrated by blind demonstration testing;
- For indications or defects identified, whether the licensee documented the conditions in examination reports and/or entered this condition into the CAP and implemented appropriate corrective actions; and
- For indications accepted for continued service, whether the licensee evaluation and acceptance criteria were in accordance with the ASME Section XI Code, 10 CFR 50.55a(g)(6)(ii)(D), or an NRC-approved alternative.

The inspectors reviewed the welded repair to Reactor Head Penetration Nozzle No. 69 to confirm that the welding process and welding examinations were performed in accordance with the ASME Code, 10 CFR 50.55a(g)(6)(ii)(D), and approved NRC relief request I3R-09.

b. Findings

Failure to Accomplish Corrective Actions Following Identified Boric Acid Leakage on Reactor Head Penetration No. 77

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors on April 27, 2012, when licensee personnel failed to accomplish corrective actions following identified boric acid leakage on a Unit 1 reactor head penetration. Specifically, the licensee did not adequately implement corrective actions involving cleaning and removal of boric acid deposits following identified boric acid leakage on Unit 1 Reactor Head Penetration No. 77.

Description: On April 27, 2012, the inspectors reviewed photographs obtained from the BMV examination conducted during A1R16 that identified Unit 1 core exit thermocouple Reactor Head Penetration No. 77 as having evidence of boric acid deposit accumulation on the reactor head around Penetration No. 77 between 90º and 360º. The BMV examination was required by ASME Code Case 729-1 and was conducted to identify visual indications of potential leakage and potential surface indications/degradation from reactor head penetrations and involved the visual examination around the circumference of each reactor head penetration.

Boric acid leakage at the mechanical connection of Penetration No. 77 had been identified during an earlier forced outage in August 2010 (IR 1104415). The mechanical connection was located on Penetration No. 77 above the reactor head insulation. The corrective actions were to repair to prevent further leaking (i.e., mechanical connection repair) and clean/remove all boric acid deposits and residue from all affected surfaces. During the previous Unit 1 A1R15 refueling outage, the licensee had performed corrective actions to repair the leaking mechanical connection and clean/remove boric acid deposits under WO 1286769. During the repair and cleaning activity, the licensee used water to wash off boric acid deposits from the mechanical connection on Penetration No. 77. The boric acid deposits, which were now in solution due to the use of water, flowed down the penetration onto the reactor head insulation and down the annulus between the insulation and penetration onto the reactor head surface at the intersection with Penetration No. 77. The licensee failed to determine the impact of washing down boric acid deposits from the mechanical connection, thereby resulting in boric acid deposit accumulation on the reactor head masking potential surface indications at the head-to-penetration intersection as evidenced by the BMV examination results during A1R16. In addition, during the repair and cleaning of the mechanical connection, the licensee failed to remove boric acid deposit accumulation from the mechanical connection that now had dropped below onto the reactor head insulation and possibly below the head insulation onto the reactor head and failed to clean the affected head surface prior to returning the reactor head back into service.

The licensee did not adequately accomplish the cleaning and removal corrective action, resulting in a condition adverse to quality (boric acid accumulation on reactor head penetration) to not be corrected. Relocating some of the boric acid deposits from the mechanical connection above the head to onto the reactor head did not correct the condition adverse to quality. The licensee staff was cognizant of the fact that they were washing down the boric acid deposits from the mechanical connection using water and that this was falling below onto the head insulation and possibly below onto the reactor

head. However, the licensee did not remove the fallen boric acid deposits and clean the surfaces affected due to washing and also did not completely remove all boric acid deposits from the mechanical connection. Therefore, the licensee was deficient in correcting a condition adverse to quality regarding cleaning and removal of all boric acid deposits/residue. Specifically, those deposits were not removed as evidenced by the boric acid deposit accumulation on the reactor head around Penetration No. 77 identified during the BMV examination in A1R16, boric acid deposits on the reactor head insulation, and boric acid residue on the mechanical connection identified during the A1R16 refueling outage visual inspection.

As a consequence, the reactor head BMV penetration examinations performed during A1R16 identified boric acid deposit accumulation and resulted in masking some of the surface area at the intersection between the reactor head and Penetration No. 77. The masking due to boric acid deposits around Penetration No. 77 resulted in a reduction in the defense-in-depth ability to identify potential surface indications and/or leakage around Reactor Head Penetration No. 77.

The licensee initiated corrective actions during the A1R16 outage by generating IR 1359227 that identified the failure to clean and remove all boric acid residue/deposits following reactor head penetration leakage. The licensee also generated WO 1368609 to have the reactor head near Penetration No. 77 thoroughly cleaned of any boric acid deposits and a visual examination be performed to confirm no gross degradation was present before returning the reactor head back to service. The inspectors verified that data from the UT examination performed on Penetration No. 77 during A1R16 was analyzed by the licensee to confirm that no leak path could be identified at the reactor head-to-penetration intersection.

Analysis: The inspectors determined that the licensee's failure to accomplish corrective actions pertaining to cleaning of boric acid deposits following identified boric acid leakage on Unit 1 Reactor Head Penetration No. 77 was a performance deficiency. The performance deficiency was screened in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency did not involve a violation that impacted the regulatory process or contribute to actual consequences. The performance deficiency was determined to be more than minor because the issue was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. Specifically, the reactor head was returned to service without accomplishing appropriate corrective actions to remove all boric acid deposits and therefore resulted in boric acid deposits being left on the reactor head for one operating cycle and masking potential surface indications from Penetration No. 77 during the subsequent BMV examination.

In accordance with IMC 0609, Attachment 4, the inspectors answered 'No' to the SDP Phase I screening question, "Assuming worst case degradation, would the finding result in exceeding the Tech Spec limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function assuming the worst case degradation?" Therefore, this issue screened as having very low safety significance (Green).

This finding had a cross-cutting aspect in the Work Control component of the Human Performance cross-cutting area because the licensee did not appropriately plan the work activity to repair and clean the mechanical connection on Unit 1 Penetration No. 77 by incorporating job site conditions, including risk insights associated with potentially washing down boric acid deposits below the reactor head insulation onto the reactor head (H.3 (a)).

Enforcement: Title 10 CFR Part 50, Appendix B, Criteria XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances, are promptly identified and corrected.

Contrary to the above, on April 27, 2012, the inspectors identified that the licensee had failed to correct a condition adverse to quality. Specifically, in August 2010, the licensee had identified boric acid leakage on the mechanical connection of Unit 1 Reactor Head Penetration No. 77. Although the licensee corrected the leakage, the licensee failed to take corrective action to ensure that all the boric acid deposits from the mechanical connection leakage above the reactor head were removed and that none of that boric acid deposit ended up deposited on the reactor head. This failure to take corrective actions led to boric acid deposits from Penetration No. 77 mechanical connection leakage being left on the reactor head for an entire operating cycle resulting in masking of potential surface indications at the intersection between the reactor head and Penetration No. 77. Because this violation was of very low safety significance and it was entered into the licensee's CAP as IR 1359227, it is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy **(NCV 05000456/2012003-03, Failure to Accomplish Corrective Actions Following Identified Boric Acid Leakage on Reactor Head Penetration No. 77)**.

.3 Boric Acid Corrosion Control

a. Inspection Scope

On April 16, 2011, the inspectors observed the licensee staff performing visual examinations of the RCS within containment to determine if these examinations focused on locations where boric acid (BA) leaks could cause degradation of safety significant components. Additionally, the inspectors conducted an independent Mode 3 containment "as-found" walkdown focusing on the identification of boric acid residue on plant SSCs.

The inspectors reviewed the following licensee evaluations of RCS components with BA deposits to determine if degraded components were documented in the CAP. The inspectors also evaluated corrective actions for any degraded RCS components to determine if they met the component Construction Code, ASME Section XI Code, and/or an NRC-approved alternative:

- Boric Acid Evaluation (BAE) 1127299, Body to Bonnet Leakage on Valve 1SI8818A;
- BAE 1127298, Body to Bonnet Leakage on Valve 1SI8818C; and
- BAE 01101249-02, Dry Boric Acid Deposit on Eductor Suction Flange 1CS01SA.

The inspectors reviewed the following corrective actions related to evidence of BA leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI:

- IR 1190678, 1PS22A Dry Boric Acid on Fitting;
- IR 1121978, Boric Acid at 1LT-0436 Manifold Valve Packing;
- IR 1228201, Dry Boric Acid at 1RH01PA Pump Bowl; and
- IR 1267786, Dry Boric Acid at Valve Packing on 1CV7037.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The NRC inspectors observed acquisition of eddy current testing (ET) data, interviewed ET data personnel, and reviewed documentation related to the SG ISI program to determine if:

- In-Situ SG tube pressure testing screening criteria used were consistent with those identified in the Electric Power Research Institute (EPRI) TR-107620, “Steam Generator In-Situ Pressure Test Guidelines,” and that these criteria were properly applied to screen degraded SG tubes for in-situ pressure testing;

- the numbers and sizes of SG tube flaws/degradation identified was bounded by the licensee’s previous Outage Operational Assessment predictions;

- the SG tube ET examination scope and expansion criteria were sufficient to meet the TSs and EPRI 1003138, “Pressurized Water Reactor Steam Generator Examination Guidelines”;

- the SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to these SG tubes;

- the licensee identified new tube degradation mechanisms and implemented adequate extent of condition inspection scope and repairs for the new tube degradation mechanisms;

- the licensee implemented repair methods which were consistent with the repair processes allowed in the plant TS requirements and to determine if qualified depth sizing methods were applied to degraded tubes accepted for continued service;

- the licensee implemented an inappropriate “plug on detection” tube repair threshold (e.g., no attempt at sizing of flaws to confirm tube integrity);

- the licensee primary-to-secondary leakage (e.g., SG tube leakage) was below 3 gallons-per-day or the detection threshold during the previous operating cycle;

- the ET probes and equipment configurations used to acquire data from the SG tubes were qualified to detect the known/expected types of SG tube degradation in accordance with Appendix H, "Performance Demonstration for Eddy Current Examination," of EPRI 1003138;

- the licensee performed secondary side SG inspections for location and removal of foreign materials; and

- the licensee implemented repairs for SG tubes damaged by foreign material.

The licensee did not perform in-situ pressure testing of SG tubes. Therefore, no NRC review was completed for this inspection attribute.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems entered into the licensee's CAP and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI-related problems;

- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and

- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On June 28, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that 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, procedural compliance, 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 71111.11-05.

b. Findings

No findings were identified.

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

On April 16, 2012, the inspectors observed activities in the control room during a power reduction to conduct turbine stop valve testing after turbine upgrades from an extended power up-rate. 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 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 71111.11-05.

b. Findings

No findings were identified.

.3 Conformance With Examination Security Requirements (71111.11B)

a. Inspection Scope

The inspectors reviewed the facility licensee's exam physical security controls (e.g., access restrictions and simulator input/output (I/O) controls, simulator software) and integrity measures (e.g., security agreements, simulator software access) throughout the inspection period.

b. Findings

One licensee-identified NCV is documented in Section 4OA7 of this report. No other issues were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- Auxiliary Building Floor Drain System.

The inspectors reviewed historic equipment issues associated with the auxiliary building floor drain system and independently verified the licensee's actions to address condition or performance 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 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 1 Safety-Related Bus 141 Outage - Special Risk Assessment;
- Direct Current Bus 212-112 Cross-Tied - Planned Unit 2 Yellow Risk;
- Unit 1 “B” Train Component Cooling Pump Through Wall Leak;
- Unit 1 “A” Train Main Steam Isolation Valve Active Accumulator Failure;
- Unit 1 Refueling Outage Risk Management Plan.

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 the 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.

Specific documents reviewed during this inspection are listed in the Attachment. These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Part 21 Issue associated with Rosemont Model 1154 Series High Pressure Transmitters;
- Emergency Diesel Generator Speed Switch Mounting Hardware;
- Foreign Material Identified Inside the Unit 1 Containment Emergency Core Cooling System Sump;
- Refueling Equipment Crane Issue; and
- Unit 1 “A” Main Steam Isolation Valve Active Accumulator Low Pressure Issue.

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

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

b. Findings

(1) Failure to Follow Operability Determination Standards in Addressing High Energy Line Break Concerns

Introduction: The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to follow their Operability Determination process after identifying potential safety-related structural loading issues created by a postulated turbine building High Energy Line Break (HELB). Specifically, the licensee identified and addressed a very specific issue related to safety-related divisional separation wall loading concerns, but failed to adequately evaluate the extent to which a postulated Current Licensing Basis (CLB) HELB condition could affect other TS and/or safety-related SSCs.

Description: From March 2011 through June 2012, the NRC identified numerous non-conformances associated with the protection of safety-related electrical equipment in the auxiliary building from a turbine building HELB event. A summary of the non-conforming issues included:

- Failure to evaluate a non-conservative HELB damper thermal link melt time against the plant's licensing basis single failure criterion;
- Failure to adequately consider a pipe leak in accordance with licensing basis standards;
- Failure to perform an adequate extent of condition review for other safety-related spaces that could be affected by a non-conservative HELB analysis;
- Failure to identify a potential common mode failure, in that a HELB coincident with a licensing basis single failure would subject both trains of safety-related reactor trip breakers to a harsh steam environment;

- Failure to classify “important to safety” equipment in the Emergency Diesel Generator rooms, Engineered Safeguard Feature 4 kilovolt (kV) rooms, and safety-related Miscellaneous Electrical Equipment Rooms in accordance with 10 CFR 50.49.

During the licensee’s efforts to resolve the issues described above, the licensee identified that the Analysis of Record (AOR) non-conservatively assumed that the sudden pressure wave created by a turbine building HELB did not create “abnormal loads” on the 4kV engineered safeguard feature divisional separation walls. The CLB design requirements stated that the term “abnormal loads” included the impactive and impulsive effects on the structures generated by postulated pipe breaks. The licensee determined that the omission of HELB-related pressure loads from the AOR was a legacy issue caused by the limitations of the original software modeling. The licensee entered this issue into the CAP, and performed Operability Evaluation 2012-004. The inspectors reviewed this evaluation and aspects of prior revisions to this evaluation (under Operability Evaluation 2011-006, Revisions 1-4) during this inspection activity.

The possibility of differential compartment pressurization was first identified by the licensee and documented in IR 1365361. At the time, the licensee documented the issue based on an unreviewed GOTHIC model of the 426’ elevation 4kV switchgear rooms. The licensee contracted Numerical Applications Incorporated (NAI) to perform an independent review of the 426’ elevation model. Based on this review, the licensee identified that a short-term pressure transient may occur in the turbine building during a HELB event. This short-term (roughly less than a second) impulse pressure wave travels the length of the affected wall rather than as a static differential pressure. The licensee estimated that up to 0.26 pounds per square inch differential (psid) could exist between the divisional wall separating the two safety-related 4kV trains.

Operability Evaluation 2012-004 determined that the limiting structural element would be the vertical steel columns supporting the divisional walls. Based on this determination, the licensee calculated a maximum permissible HELB loading of 116 pound per square foot (or 0.81 pounds per square inch (psi)). Therefore, the licensee determined there was an available margin to safety of roughly a factor of three (i.e. 0.26 psid * 3 safety factor = 0.78 psid).

The inspectors identified three issues based upon their review.

- <u>Issue 1</u>

  The inspectors identified that although the licensee’s operability evaluation had evaluated the effects of the pressure wave on the divisional wall, it failed to consider how the pressure wave would affect the hollow steel divisional door associated with this wall. This door was considered a HELB barrier based upon a prior NRC finding associated with HELB single failure criteria (NCV 05004562011005-004; 05000457/2011005-004.) The inspectors were concerned that this door (and other similar boundary doors) could be forced open by the differential pressure postulated in Operability Evaluation 2012-004. With the divisional door failed open, the energy and heat from a turbine building HELB could adversely affect both safety-related trains assuming a CLB single failure of a HELB damper.

- Issue 2

  The inspectors identified that the licensee had not evaluated the impact that the pressure wave discussed in Operability Evaluation 2012-004 could have on safety-related components and systems within the structure. Components within the various affected spaces included, but were not limited to, the emergency diesel generators, safety-related 4kV electrical buses and associate undervoltage and degraded voltage circuitry, safety-related 120 Vac and 120 Vdc buses, safety-related electrical inverters, and safety-related reactor trip breakers. These components were required to be environmentally qualified as identified in NCV 05000456/2012002-005; 05000457/2012002-005.

- Issue 3

  The inspectors identified that the licensee had not adequately evaluated the impact of the L-wall, and L-wall personnel doors and equipment rollup doors, the divisional walls discussed in Operability Evaluation 2012-004, the same structural divisional walls and boundary doors discussed in Issue 2 of this finding, and the structures and components discussed in Issue 3 of this finding from the potential differential pressure created following a HELB break or leak after the initial pressure wave (i.e. time after 1 second). The licensee had previously assumed design basis large breaks selected to maximize mass and energy release to the turbine building. For these types of scenarios, the licensee concluded that the turbine building blowout panels would blow out before the individual room HELB dampers would shut. Under a scenario of a smaller HELB pipe break or pipe leak, the turbine building could pressurize more slowly up to the force required to blow out the turbine building blowout panels (approximately 0.73 psi.) As the turbine building pressurizes, the adjacent auxiliary building rooms would pressurize accordingly until its associated HELB damper(s) shut to isolate the room. For the CLB case in which a damper failed to shut, a differential pressure could be created between the rooms. For cases where the dampers shut, there could be a differential pressure across the L-wall (and L-wall doors). The NRC identified, in NCV 0500456/2011005-004; 05000457/2011005-004, that the licensee had not previously considered leaks, as required by the CLB.

  The inspectors reviewed procedure OP-AA-108-115, “Operability Determination,” Revision 11, and identified that all three issues shared a common theme of being too narrowly focused. The requirement to identify all non-conforming SSCs, and the requirement to determine the extent of condition of all similarly affects SSCs, was included in OP-AA-108-115.

  Specifically, licensee procedure OP-AA-108-115, required, in part, the following:

  Section 4.2.2

  .1 . . . The OpEval [Operability Evaluation] should address the following, as applicable:

  - *Determine what SSC is degraded or potentially nonconforming*
  - *Determine the extent of condition for all similarly affected SSCs.*

For Issue 1 and Issue 2, the licensee focused on divisional block walls, but did not consider the structural doors, structures within the rooms, or components or systems within the room that were safety-related and/or required by the TSs. The doors did not have a quality pressure rating, but were designed as fire barriers. The safety-related equipment within the rooms was required to be environmentally qualified. Therefore, the inspectors concluded that the licensee did not adequately determine the extent of condition for all similarly affected SSCs.

For Issue 3, the licensee focused on the abnormal load created from a HELB pressure wave, (i.e. within approximately a second) but had not adequately considered the applicable load created from the differential pressure of a design basis HELB break or leak with and without a CLB single failure. Under this scenario, the licensee estimated that the loads on the divisional walls could be up to 0.6 psid with a peak L-wall personnel and equipment rollup door loading of 0.73 psid. Therefore, the inspector's concluded that the licensee did not adequately identify all non-conforming conditions.

In addition to being too narrowly focused, the inspectors concluded that each issue had an aspect in which the licensee failed to appropriately consider prior NRC NCVs during their on-going HELB operability and system re-design reviews.

The licensee entered Issues 1-3 into the CAP as IR 1382574 and IR 1389889. Corrective actions included performing a prompt operability determination associated with the issues raised by the inspectors and concluded that the equipment involved remained operable. The licensee planned to complete a formal revision to Operability Evaluation 2012-004 by July 24, 2012. Additionally, the licensee planned to correct all non-conforming conditions related to this finding.

Analysis: The inspectors determined that the failure to adhere to Operability Determination process standards outlined in OP-AA-108-115, "Operability Determination," during the evaluation of non-conforming conditions was a performance deficiency. The performance deficiency was screened in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the performance deficiency did not involve a violation that impacted the regulatory process or contribute to actual consequences. This finding was determined to be more than minor because it was similar to the "not minor if" aspect of Example 3.j in IMC 0612, Appendix E, "Examples of Minor Issues," since the issues identified by the inspectors resulted in a condition in which there was a reasonable doubt on the operability of the structures protecting TS system and components and systems within the structures that perform a TS function. The issues were dissimilar from the "minor because" aspect of the example since the impact of the issues were not minimal. In addition, the performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the issues identified by the inspectors significantly broadened the scope of previously approved Operability Evaluations and significantly reduced the confidence regarding operability margin.

The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process", Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," Table 4a, for the

Mitigating Systems Cornerstone. The inspectors answered 'No' to all of the Mitigating Systems Cornerstone questions in Table 4a of IMC 609, and, as a result, the finding screened as having very low safety significance (Green).

This finding had a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because licensee personnel did not use the Operability Determination process to evaluate the issues identified by the inspectors, and therefore did not obtain interdisciplinary input to base a decision of operability upon (H.1(a)).

Enforcement: This finding did not involve enforcement action because no regulatory requirement was violated. **(FIN 05000456/2012003-04; 05000457/2012003-04, Operability Determination Standards Not Followed for HELB Related Structural Issues Identified by the NRC)**

(2) Licensee's Position Regarding Technical Specification 3.6.3 Applicability to Main Steam Isolation Valves

Introduction: The inspectors identified an Unresolved Item (URI) related to the licensee's position that although the Unit 1 and Unit 2 MSIVs were Containment Isolation Valves (CIVs), they were not subject to TS 3.6.3, "Containment Isolation Valves," requirements.

Description: On May 30, 2012, with Unit 1 operating at full power, the licensee declared the Unit 1A MSIV inoperable in accordance with TS 3.7.2 based on maintenance performed on the valve's actuating device to address an emergent issue. This maintenance prevented the valve from closing since it temporarily removed both the active and standby accumulators from service. The inspectors questioned why the licensee had not entered TS 3.6.3, "Containment Isolation Valves," since this valve was identified in the UFSAR as a CIV meeting General Design Criteria (GDC) 57 requirements and TS 3.6.3.c specifically addressed penetration flow paths with only one CIV in a closed system.

Specifically, TS 3.6.3 stated, in part:

> *LCO [Limiting Condition for Operation] 3.6.3 - Each containment isolation valve shall be OPERABLE.*
>
> *APPLICABILITY: MODES 1, 2, 3, and 4*
>
> *C. Note. Only applicable to penetration flow paths with only one containment isolation valve and a closed system.*

	REQUIRED ACTION	*COMPLETION TIME*
C.1	*Isolate the affected penetration flow path by use of at least one closed or deactivated automatic or remote manual valve, closed manual valve, or blind flange.*	*72 hours*
C.2	*Verify the affected penetration flow path is isolated*	*Once per 31 days*

The inspectors interviewed and discussed their question with licensee staff and management. When evaluating TS 3.6.3 applicability prior to the maintenance activity, Operations referred to a table of CIVs listed in the TS 3.6.3 Bases section. The MSIVs were not listed in this table, and therefore Operations concluded that TS 3.6.3 was not applicable. The licensee entered the inspectors question into the CAP, and evaluated the issue in more detail by reviewing the origin of the TS 3.6.3 Bases table, re-reviewed the CLB, and conducted an independent review by corporate licensing engineers to determine if TS 3.6.3 should be applicable to the MSIV CIVs. In addition, the licensee contacted other reactor licensees to gain additional insights.

The licensee's position was that the original license never considered the MSIVs as applicable to the CIV TS and had never created a new requirement to do so through changes within the CLB. The licensee's basis for this position was documented in IR 1375940 and, in summary, concluded that:

- The original listing of CIVs in TS 3.6.3 contained in NUREG-1223, "TSs, Braidwood Station Unit Nos. 1 and 2, Docket Nos. STN 50-456 and STN 50-457, Appendix "A" to Licensee No. NPF-59," dated October 1986, did not include the MSIVs (MS001A/B/C/D) in TS Table 3.6-1, "Containment Isolation Valves";

- A separate TS provided the requirements for the MSIVs (TS 3.7.2) and were comparable at the time of original licensing (i.e. restore the valve to operable status within 4 hours);

- The MSIVs were exempt from 10 CFR Part 50, Appendix J, "C" leak testing and it was the licensee's position that these valves did not perform a containment isolation function;

- Any changes in licensing requirements during Improved Technical Specifications (ITS) conversions were addressed in the License Amendment Request (LAR) and associated responses to requests for additional information, and there was no change in the scope of TS 3.6.3 valves during this conversion;

- The allowances addressed by Generic Letter (GL) 91-08, "Removal of Components Lists from TSs," applied to TSs prior to ITS conversion and were subsequently incorporated into Improved Standard TS as appropriate and therefore the requirements of GL 91-08 were not applicable to Improved Standard TS;

- With an inoperable MSIV, the safety analyses (both Loss of Coolant Accident (LOCA) and steam line break) remained valid assuming no additional failures; and

- The licensee discussed this issue with several other pressurized water reactor licensees and did not receive a consistent answer (some licensees would enter their applicable CIV TS and some licensees would not based on the May 30, 2012 scenario provided by the Braidwood licensee).

The inspectors reviewed the licensee's evaluation, plant CLB, and guidance contained in GL 91-08. GL 91-08 provided for preparing a request for a licensee to remove component lists from TS. The inspectors identified several questions associated with

the licensee's position and bases that were unresolved at the end of the inspection period. These questions included:

- The language submitted by the licensee and approved by the NRC in the CLB TS 3.6.3 contained four clarifying notes. None of these notes appeared applicable for clarifying the scope of CIVs beyond the TS word "Each". Therefore, a simple reading of "Each Containment Isolation Valve Shall be OPERABLE," implied that every CIV was affected unless a specific exception was made;

- The MSIVs were listed in the licensee's UFSAR as GDC-57 valves (i.e. closed system CIVs);

- TS 3.6.3, Action C specifically addressed CIVs associated with a closed system;

- The MSIV bypass valves, main feedwater isolation valves, and auxiliary feedwater isolation valves were listed in the UFSAR as GDC-57 closed system CIVs, as well as the TS Bases table. Therefore, when questioned by the inspectors, the licensee concluded that TS 3.6.3 would apply to these valves, but could not readily explain the different treatment relative to the MSIVs;

- Aspects of GL 91-08, "Removal of Component Lists from TSs," appeared to apply:

  - *. . . i.e. The list of containment isolation valves in the TS may not include all valves that are classified as containment isolation valves by the plant licensing basis. Generally, the FSAR [Final Safety Analysis Report] identified those valves that are classified as containment isolation valves. With this TS change, the LCO remedial actions, and surveillance requirements will apply for all valves that are classified as containment isolation valves by the plant licensing basis. . .";*

  - *". . . Finally, it would be inappropriate for a limiting condition for operation of the TS to reference the FSAR or any other document to specify those individual components to which the TS requirements apply". . .;*

  - Additionally, this guidance noted that TS requirements would apply to all valves that had been defined as CIVs in the plant licensing basis when clarifying if the TS was applicable to CIVs tested, or not, under 10 CFR 50, Appendix J, Type C testing.

- The inspectors sampled License Event Reports (LERs) and identified several examples in which various 10 CFR Part 50 licensees entered their TS 3.6.3, "Containment Isolation Valves," TS upon the discovery of one or more inoperable MSIVs in Modes 1-4. Examples include:

  - LER 05000261/1994-002-01, "Plant Condition Outside Design Basis Due to MSIV";

- LER 05000346/1983-003-00, “MSIV Failed to Shut Completely Following a Reactor Trip”
- LER 05000370/2005-005-00, “Failure of Main Steam Line Isolation Valve to Close”; and
- LER 05000498/1988-015-00, “Two MSIVs Inoperable Resulting in a Technical Violation”.

- With respect to the licensee’s basis that there is already a TS LCO that applies with already a more conservative TS, (i.e. TS 3.7.2, “Main Steam Isolation Valves”) the inspectors did not agree with the logic that plant SSCs can only have one applicable TS. More so, while the completion time for TS 3.7.3 is more conservative than TS 3.6.3.c (i.e. 24 hours vice 72 hours), the MSIV TS is applicable in Modes 1-3, while the CIV TS is applicable in Modes 1-4. So TS 3.7.2 is not more conservative from a Mode of applicability point of view.

At the end of this inspection, the inspectors had not completed their review and final determination. This URI will remain open pending the inspector’s review of the station’s CLB and applicability of MSIVs to TS 3.6.3. **(URI 05000456/2012003-05; 05000457/2012003-05, Licensee’s Position Regarding TS 3.6.3 Applicability to Main Steam Isolation Valves)**

(3) MSIV Hydraulic System Design

Introduction: The inspectors identified an URI regarding the design of the hydraulic control system for the MSIVs. Specifically, the hydraulic system design and operability requirements result in the potential that MSIVs could not be operated from the remote shutdown panel under control room evacuation scenarios or that Engineered Safety Feature Actuation System (ESFAS) signals could fail to operate the MSIVs under certain situations.

Description: On May 28, 2012, the 1A MSIV active-side hydraulic accumulator pressure was found at 3450 psig, which was below the operability limit of 4800 psig. This prevented manual isolation of the 1A main steam line via the main control room switch, which required the active-side accumulator and is required by Technical Requirements Manual (TRM) 3.3.y Condition D. Each MSIV also has a standby accumulator that could redundantly close the valve if an ESFAS signal was received, but not from the individual isolation control switch. The 1A MSIV standby accumulator pressure was 5400 psig, thus the 1A MSIV could have been closed by an ESFAS signal.

The Action Statement for TRM 3.3.y Condition D required restoration of the individual steam line isolation capability within 48 hours. If that was not done, Condition D required the MSIV to be declared inoperable and TS.3.7.2 Condition A.1 to be entered, which required the MSIV to be returned to an operable status within 8 hours, or enter Condition B.1, which required the Unit to be in Mode 2 within 6 hours. During troubleshooting of the 1A MSIV active-side accumulator pressure issue, the licensee became concerned that they would not find and repair the active-side hydraulic problem prior to the requirement to enter Mode 2. As a result, the licensee elected to remove TRM 3.3.y Condition D from the TRM through the 10 CFR 50.59 evaluation process. As a result,

the licensee was not required to declare the 1A MSIV inoperable provided the standby accumulator pressure was within operability limits.

The inspectors reviewed the control logic for the MSIV control switches in the main control room and the remote shutdown panel. The inspectors noted that the MSIV control switches on the remote shutdown panels used only the active-side accumulator to reposition the MSIV. When the licensee removed TRM 3.3.y Condition D, they effectively removed any requirement to maintain the ability to close MSIVs from the remote shutdown panel.

The inspectors reviewed procedures 0BwOA PRI-5, "Control Room Inaccessibility Unit 0;" 1BwOA PRI-5, "Control Room Inaccessibility Unit 1;" and 2BwOA PRI-5, "Control Room Inaccessibility Unit 2;" and did not identify a requirement to close the MSIVs prior to main control room evacuation. As a result, any MSIV with an active-side accumulator inoperable, which was allowed indefinitely by current site procedures, would not be closed prior to evacuating the main control room and would not be able to be closed from the remote shutdown panel. The licensee's position was that there was no reason, purpose, or requirement for the MSIV control switches on the remote shutdown panel and no condition that would require repositioning them from the remote shutdown panel following evacuation of the main control room. The inspectors noted that Step 13.c of procedures 1(2)BwOA PRI-5 directed operators to close all MSIVs if RCS temperature dropped below 557ºF. This step would need to be performed from the remote shutdown panel since the main control room was evacuated at Step 9.

In addition, the inspectors questioned whether allowing one inoperable accumulator on each MSIV for an unlimited period of time had an effect on the ability of the ESFAS system to perform its safety function. Although only one of the two hydraulic accumulators was necessary to reposition each MSIV, each ESFAS train was assigned to a specific accumulator for each MSIV. For example, the A ESFAS train was assigned to the active-side accumulator on two MSIVs and the standby-side accumulator on the other two MSIVs. The B ESFAS train controlled the MSIVs using the opposite accumulators. As a result, there were certain combinations of accumulators that could be out of service on multiple MSIVs such that an inoperable ESFAS train would fail to close multiple MSIVs. At the end of the inspection period, the inspectors were reviewing whether this allowance satisfied the requirements of TS 3.3.2 and TS 3.7.2.

At the conclusion of the inspection period, the inspectors had not completed their review of licensing documents related to this issue. As a result, this URI will remain open pending a review of the station's CLB and requirements associated with the remote shutdown panel and MSIVs. **(URI 05000456/2012003-06; 05000457/2012003-06, MSIV Hydraulic System Design)**

(4) Removal of TRM 3.3.y Requirement Via 10 CFR 50.59 Evaluation

Introduction: The inspectors identified an URI regarding the licensee's evaluation of the removal of the TRM 3.3.y requirement to maintain the ability to close individual MSIVs. Specifically, the inspectors have not yet determined whether the licensee correctly evaluated the removal of TRM 3.3.y Condition D from the TRM.

Description: On May 28, 2012, the 1A MSIV active-side hydraulic accumulator pressure was found at 3450 psig, which was below the operability limit of 4800 psig. This prevented manual isolation of the 1A steam line via the main control room switch, which

required the active-side accumulator and was required by TRM 3.3.y Condition D. Each MSIV also had a standby-side accumulator that could redundantly close the valve if an ESFAS signal was received, but not from the individual isolation control switch. The 1A MSIV standby accumulator pressure was 5400 psig, thus the 1A MSIV could have been closed by an ESFAS signal and therefore remained operable.

The action statement for TRM 3.3.y Condition D required restoration of the individual steam line isolation capability within 48 hours. If that was not done, Condition D required the MSIV to be declared inoperable and TS 3.7.2 Condition A.1 to be entered, which required the MSIV to be operable within 8 hours or enter Condition B.1, which required the Unit to be in Mode 2 within 6 hours. During troubleshooting of the 1A MSIV active-side accumulator pressure issue, the licensee became concerned that they would not find and repair the active-side hydraulic problem prior to the requirement to enter Mode 2. As a result, the licensee elected to remove TRM 3.3.y Condition D from the TRM through the 10 CFR 50.59 evaluation process. As a result, the licensee would not be required to declare the 1A MSIV inoperable provided the standby-side accumulator pressure was within operability limits.

The inspectors reviewed the 10 CFR 50.59 evaluation of this change and questioned the licensee's response to Question 2, which asked, "Does the proposed activity result in a more than minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the UFSAR?" The licensee concluded that it did not. However, the inspectors noted that TRM 3.3.y Condition D was the only requirement for any particular MSIV accumulator, standby or active, to be operable. The inspectors were concerned that removing the requirement increased the likelihood that an active-side hydraulic accumulator would be inoperable, which increased the likelihood that the hydraulic system would fail to operate the 1A MSIV, which would constitute an increase in the likelihood of a malfunction of the 1A MSIV. Furthermore, the inspectors noted that the licensee's response to Question 2 credited the redundancy of the hydraulic system (active and standby accumulators) in coming to the conclusion that the change does not increase the likelihood of a malfunction of an SSC, despite removing the only requirement which helped ensure that redundancy.

At the end of the inspection period, the inspectors had not completed their review of the 10 CFR 50.59 evaluation. As a result, this URI will remain open pending a full review of the applicable documentation. **(URI 05000456/2012003-07; 05000457/2012003-07, Removal of TRM 3.3.y Requirement Via 10 CFR 50.59 Evaluation)**

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 Train A Safety Injection Miniflow Discharge Check Valve Following Maintenance;

- Unit 1 “A” Emergency Diesel Generator Load Sequence Test Following Voltage Regulator Work;
- Spent Fuel Cooling Pipe Line Support Work;
- Unit 1 Reactor Coolant System Loop “A” Resistance Temperature Detector Replacement;
- Unit 1 3J Control Rod Drive Mechanism Stack Replacement;
- Unit 1 “C” Reactor Coolant Pump Seal Package Replacement; and
- Unit 1 “A” MSIV Accumulator Spool Valve Replacement.

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 various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis 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 the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the Unit 1 refueling outage (RFO), conducted from April 15 to May 19 to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TS when taking equipment out of service;

- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and OSP requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TS;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

This inspection constituted one RFO sample as defined in IP 71111.20-05.

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:

- Unit 1 Main Steam Safety Valve Testing (Containment Isolation Valve);
- Unit 1 1SD002B SG Blowdown Isolation Valve Testing (Containment Isolation Valve);
- Unit 1 “B” Safety Injection Actuation Surveillance (Inservice Testing);
- Unit 1 “B” Emergency Diesel Generator Full Load Reject Surveillance (Routine);
- Unit 1 “A” Emergency Diesel Generator Fast Start Surveillance (Routine); and
- Unit 1 RCS Unidentified Leak TS Surveillance (Reactor Coolant System).

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, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, ASME Code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment.

This inspection constituted two routine surveillance testing samples, one in-service testing sample, one RCS leak detection inspection sample, and two CIV samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted a partial sample as defined in IP 71124.01-05.

.1 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 where appropriate for the given radiological hazard.

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

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

- Steam Generator Eddy Current Testing and Repair;
- Steam Generator Manway, Diaphragm and Bolt Cleaning;
- Cavity Decontamination Equipment Staging; and
- Reactor Nozzle Mechanical Stress Improvement Program (MSIP).

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:

- identification of hot particles;
- the presence of alpha emitters;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials;
- 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.

.2 Instructions to Workers (02.03)

a. Inspection Scope

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

- Steam Generator Eddy Current Testing and Repair;
- Steam Generator Manway, Diaphragm and Bolt Cleaning; and
- Cavity Decontamination Equipment Staging.

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

.3 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 control, survey, and release 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 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 has 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.

b. Findings

No findings were identified.

.4 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, radiation protection 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 one of the two NRC-approved methods of determining effective dose equivalent from external radiation exposures.

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.

- Steam Generator Eddy Current Testing and Repair;
- Steam Generator Manway, Diaphragm and Bolt Cleaning; and
- Cavity Decontamination Equipment Staging.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors discussed with the radiation protection 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 reduce 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 the very high radiation area.

b. Findings

No findings were identified.

.6 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection 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 matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.7 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether 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 since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.8 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)

This inspection constituted a partial sample as defined in IP 71124.02-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three year rolling average of collective exposure.

The inspectors reviewed the site-specific trends in collective exposures using NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," plant historical data, and source term (average contact dose rate with reactor coolant piping) measurements.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures as-low-as-is-reasonably-achievable (ALARA), which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected the following work activities of the highest exposure significance.

- Steam Generator Eddy Current Testing and Repair;
- Steam Generator Manway, Diaphragm and Bolt Cleaning;
- Cavity Decontamination Equipment Staging; and
- Reactor Nozzle MSIP Work Activities.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

.4 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as

the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

.5 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice (e.g., workers were familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers were not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

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

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

.1 Inspection Planning (02.01)

a. Inspection Scope

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

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

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

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

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

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

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

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

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

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

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

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

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

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

The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

Based on the UFSAR, TSs, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of SCBAs staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and Operations Support Center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response

and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of SCBAs (including personal bottle change-out). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

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

The inspectors reviewed the past 2 years of maintenance records for select SCBA units used to support operator activities during accident conditions and designated as “ready for service” to assess whether any maintenance or repairs on any SCBA unit’s vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically were the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the SCBA manufacturer’s recommended practices. For those SCBAs designated as “ready for service,” the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up-to-date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

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

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

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

.1 Inspection Planning (02.01)

a. Inspection Scope

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

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

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

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

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor was NVLAP accredited and if the approved irradiation test categories for each type of personnel dosimeter used were consistent with the types and energies of the radiation present and the way the dosimeter was being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or low dose equivalent).

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

The licensee does not use non-NVLAP accredited passive dosimeters.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee used a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose and whether the correction factor aws based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The

inspectors assessed whether the licensee had identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

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

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

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

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

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

The inspectors selected internal dose assessments obtained using in vitro monitoring through a vendor program, specifically, the inspectors reviewed and assessed the adequacy of the program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (tritium, fission products, and activation products), including collection and shipment of samples.

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

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

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

b. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

a. Inspection Scope

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

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

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

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

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

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

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

b. Findings

No findings were identified.

Shallow Dose Equivalent

a. Inspection Scope

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

b. Findings

No findings were identified.

Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's neutron dosimetry program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra; (b) there was sufficient sensitivity for low dose and/or dose rate measurement; and (c) neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

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

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

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

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07)

This inspection constituted one complete sample as defined in IP 71124.07-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the annual radiological environmental operating reports and the results of any licensee assessments since the last inspection to assess whether that the radiological environmental monitoring program (REMP) was implemented in accordance with the TSs and Offsite Dose Calculation Manual (ODCM). This review included reported changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the ODCM to identify locations of environmental monitoring stations.

The inspectors reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audit results of the program to assist in choosing inspection “smart samples” and audits and technical evaluations performed on the vendor laboratory program.

The inspectors reviewed the annual effluent release report and the 10 CFR Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste,” report, to determine if the licensee was sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

b. Findings

No findings were identified.

.2 Site Inspection (02.02)

a. Inspection Scope

The inspectors walked down select air sampling stations and thermoluminescent dosimeter (TLD) monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition. Consistent with smart sampling, the air sampling stations were selected based on the locations with the highest X/Q, D/Q wind sectors, and TLDs were selected based on the most risk-significant locations (e.g., those that have the highest potential for public dose impact).

For the air samplers and TLDs selected, the inspectors reviewed the calibration and maintenance records to evaluate whether they demonstrated adequate operability of these components. Additionally, the review included the calibration and maintenance records of select composite water samplers.

The inspectors assessed whether the licensee had initiated sampling of other appropriate media upon loss of a required sampling station.

The inspectors observed the collection and preparation of environmental samples from different environmental media (e.g., ground and surface water, milk, vegetation, sediment, and soil) as available to determine if environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with procedures.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR; NRC Regulatory Guide 1.23; “Meteorological Monitoring Programs for Nuclear Power Plants;” and licensee procedures. The inspectors assessed whether the meteorological data readout and recording instruments in the control room and, if applicable, at the tower, were operable.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the annual environmental monitoring report. The inspectors selected events that involved a missed sample, inoperable sampler, lost TLD,

or anomalous measurement to determine whether the licensee had identified the cause and had implemented corrective actions. The inspectors reviewed the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection) and reviewed the associated radioactive effluent release data that was the source of the released material.

The inspectors selected SSCs that involve or could reasonably involved licensed material for which there was a credible mechanism for licensed material to reach ground water, and assessed whether the licensee had implemented a sampling and monitoring program sufficient to detect leakage of these SSCs to ground water.

The inspectors evaluated whether records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection were retained in a retrievable manner.

The inspectors reviewed any significant changes made by the licensee to the ODCM as the result of changes to the land census, long-term meteorological conditions (3-year average), or modifications to the sampler stations since the last inspection. The inspectors reviewed technical justifications for any changed sampling locations to evaluate whether the licensee performed the reviews required to ensure that the changes did not affect the ability to monitor the impacts of radioactive effluent releases on the environment.

The licensee used a vendor laboratory to analyze the REMP samples, so the inspectors reviewed the results of the vendor's quality control program, including the inter-laboratory comparison, to assess the adequacy of the vendor's program.

The inspectors reviewed the results of the licensee's inter-laboratory comparison program to evaluate the adequacy of environmental sample analyses performed by the licensee. The inspectors assessed whether the inter-laboratory comparison test included the media/nuclide mix appropriate for the facility. If applicable, the inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the REMP.

b. Findings

No findings were identified.

.3 Identification and Resolution of Problems (02.03)

a. Inspection Scope

The inspectors assessed whether problems associated with the REMP were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. Additionally, the inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved the REMP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences Performance Indicator (PI) for the period from the first quarter 2011 through the first quarter 2012. The inspectors used PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, 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 radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

.2 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent TS/ODCM radiological effluent occurrences PI for the period from the first quarter 2011 through the first quarter 2012. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also

reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment.

This inspection constituted one Radiological Effluent TS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.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 that 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 identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that 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 condition report packages.

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

b. Findings

No findings were identified.

.3 Annunciator System Indications Following Refueling Outage A1R16

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized several corrective action items (IRs 1358191, 1358493, 1364178, and 1365431) documenting unexpected or abnormal annunciator indications during the end of, and following, the Unit 1 refueling outage. The inspectors discussed the issues with licensee personnel to determine whether the numerous issues could be related to a modification on reactor protection system logic that was installed during the refueling outage. The inspectors followed up on licensee troubleshooting and resolution of the issues. There were several different reasons for the indications and the licensee satisfactorily resolved the issues.

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

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 5, 2012, the inspectors presented the inspection results to Mr. D. Enright and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspectors confirmed that 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 and Occupational ALARA Planning and Controls with Mr. M. Kanavos, Plant Manager, and other members of the licensee's staff on April 20, 2012.
- The inspection results for the area of Inservice Inspection with Mr. D. Enright, Site Vice President, and other members of the licensee's staff on May 22, 2012.
- The inspection results for the areas of In-Plant Airborne Radioactivity Control and Mitigation, Occupational Dose Assessment, and Occupational Exposure Control Effectiveness PI Verification with Mr. D. Enright and other members of the licensee's staff on June 15, 2012.
- The inspection results for the Licensed Operator Examination Security Issue to Mr. G. Dudek, Training Director, and other members of the licensee's staff on June 28, 2012.

- The inspection results for the areas of Radiological Environmental Monitoring and Radiological Effluent TS/ODCM Radiological Effluent Occurrences PI Verification with Mr. J. Bashor, Acting Plant Manager, on June 29, 2012.

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 violation of very low significance (Green) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as an NCV:

- Title 10 CFR 55.49, "Integrity of Examinations and Tests," requires, in part, that the licensee shall not engage in activities that compromises the integrity of any application, test, or examination required by 10 CFR Part 55. Contrary to the above, on March 30, 2012, at the Clinton Power Station, the licensee identified activities that compromised the integrity of the examinations required by 10 CFR Part 55. Specifically, the licensee identified that the control room simulator's plant process computer model was saving sequence of events files on a routine basis, which contained examination materials related to examinations required by 10 CFR Part 55. A licensee investigation determined that the same condition existed at other Midwest Exelon sites, including the Braidwood Station. The licensee determined that some of the files contained examination materials related to examinations required by 10 CFR Part 55. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination.

  Although the examination materials were available for scrutiny by unauthorized personnel, (compromised), the licensee was able to demonstrate that the files were not readily viewable, required interpretation and additional administrative controls were in place that would likely inhibit access to, and reconstruction of simulator events. Therefore, no individuals had an unfair advantage in taking any NRC-related examinations. The inspectors concluded that this finding and the associated NCV were of very low safety significance (Green).

  This issue was documented in the facility's CAP as IR 1350393. Corrective actions for this issue included revising the simulator's software to delete data from the sequence of events files being generated by the simulator upon reset of the simulator.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Enright, Site Vice President
M. Kanavos, Plant Manager
M. Abbas, NRC Coordinator
L. Antos, Security Operations Manager
J. Basher, Director, Site Maintenance Planning
P. Boyle, Director, Site Maintenance
S. Butler, Manager, Corrective Action Program
B. Casey, Exelon Inservice Inspection
E. Cieszkiewics, Chemist
A. Ferko, Director, Site Engineering
B. Finlay, Manager, Site Security
J. Gerrity, Site Emergency Preparedness Manager
R. Leasure, Manager, Site Radiation Protection
D. Lesnick, Emergency Preparedness Manager
J. Lizabek, Nuclear Oversight
M. Marchionda-Palmer, Director Site Operations
S. McKinney, Emergency Preparedness Coordinator
C. Mokijewski, Design Engineering Manager
J. Odeen, Manager Site Project Management
D. Palmer, Radiation Protection Superintendent
R. Radulovich, Manager, Site Nuclear Oversight
J. Rappeport, Manager, Site Chemical Environment & Radwaste
B. Schipiour, Maintenance Director
M. Sears, Program Engineer Manager
D. Stiles, Manager, Operations Training
C. VanDenburg, Manager, Site Regulatory Assurance
K. Wiebel, Physicist

Nuclear Regulatory Commission

E. Duncan, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000456/2012003-01 05000457/2012003-01	FIN	Failure to Implement Abnormal Operating Procedures When Entry Conditions Were Present (Section 1R01.2b)
05000456/2012003-02	NCV	Steam Generator Primary Manway Bolts Examined with Unqualified Procedure (Section 1R08.1b)
05000456/2012003-03	NCV	Failure to Accomplish Corrective Actions Following Identified Boric Acid Leakage on Reactor Head Penetration No. 77 (Section 1R08.2b)
05000456/2012003-04 05000457/2012003-04	FIN	Operability Determination Standards Not Followed for HELB Related Structural Issues Identified by the NRC (Section 1R15.1b(1))
05000456/2012003-05 05000457/2012003-05	URI	Licensee's Position Regarding TS 3.6.3 Applicability to Main Steam Isolation Valves (Section 1R15.1b(2))
05000456/2012003-06 05000457/2012003-06	URI	MSIV Hydraulic System Design (Section 1R15.1b(3))
05000456/2012003-07 05000457/2012003-07	URI	Removal of TRM 3.3.y Requirement Via 10 CFR 50.59 Evaluation (Section 1R15.1b(4)

Closed

05000456/2012003-01 05000457/2012003-01	FIN	Failure to Implement Abnormal Operating Procedures When Entry Conditions Were Present (Section 1R01.2b)
05000456/2012003-02	NCV	Steam Generator Primary Manway Bolts Examined with Unqualified Procedure (Section 1R08.2b)
05000456/2012003-03	NCV	Failure to Accomplish Corrective Actions Following Identified Boric Acid Leakage on Reactor Head Penetration No. 77 (Section 1R08.3b)
05000456/2012003-04 05000457/2012003-04	FIN	Operability Determination Standards Not Followed for HELB Related Structural Issues Identified by the NRC (Section 1R15.1b)

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- IR 1363289; Emergent Switching Orders Received; May 6, 2012
- IR 1363323; River Screenhouse Lost Power During Storm; May 7, 2012
- IR 1364132; NRC ID: Variance in Adverse Weather Reports; May 7, 2012
- 0BwOA ENV-1; Adverse Weather Conditions Unit 0; Revision 114
- 1BwOA ENV-1; Adverse Weather Conditions Unit 0; Revision 5
- 2BwOA ENV-1; Adverse Weather Conditions Unit 0; Revision 5
- OU-AP-104; Shutdown Safety Equipment Status Checklist; May 7, 2012
- Weather USA; Active Weather Alert - Severe Thunderstorm Warning; May 8, 2012
- National Weather Service Weather Forecast Office, Chicago, IL; Severe Thunderstorm Warning; May 6, 2012

1R04Q Equipment Alignment

- IR 1015087; 1FC01P Boric Acid at Pump Seal; January 8, 2010
- IR 1018355; BwHP 4006-079 Needs Updated - 1FC-01P; January 10, 2010
- IR 1037911; 2FC01P - Dry White Boric Acid at Pump Seals; March 2, 2010
- IR 1038010; Boric Acid in Bowl Area of Inboard Seal on 1FC01P; March 3, 2010
- IR 1041587; HGR. 2FC02001R Not Loaded (2FC01P Does Not Meet D.B. Limits); March 11, 2010
- IR 1041824; 0FC02P - Dry White and Brown Boric Acid at Pump Seal; March 11, 2010
- IR 1041838; Braidwood Metal Equipment Tag in Pump Seal Bowl; March 11, 2010
- IR 1046558; 1PI-0627 Bounces from 60-72 Pounds; March 23, 2010
- IR 1047808; EO Rounds Identified PI-FC005 Gauge is Bent; March 25, 2010
- IR 1079696; 0FC02P - Dry White Boric Acid at Pump Seal; June 11, 2010
- IR 1082661; 2FC01P - Dry White Boric Acid at Pump Seal; June 18, 2010
- IR 1083011; FP Skimmers Need to Become Operational; June 22, 2010
- IR 1088110; Elevated Silicon in 2FC01P Pump Bearing Lube Oil; June 16, 2010
- IR 1092737; 1PI-FC629 & 630 are Over Ranged; July 21, 2010
- IR 1093081; 1PI-FC0630 Appears to be Over Ranged; July 21, 2010
- IR 1095069; Debris on Surface of Fuel Pool; July 28, 2010
- BwOP FC-1; Fuel Pool Cooling System Start-up; Revision 25
- NF-AA-390; Spent Fuel Pool Material Control; Revision 5
- NF-AA-600; Spent Fuel Management; Revision 5
- OU-AA-630-1000; Spent Fuel Loading Campaign Management; Revision 0

1R05 Fire Protection

- IR 0243144; Fire Damper Visual Inspection Criteria; August 10, 2004
- IR 0247433; BwMP-3300-052 and Operability of VC; August 26, 2004
- IR 1366830, NRC Identified Unauthorized Transient Combustible in Div 22 ESF Switchgear Room May 15, 2012
- IR 1367891, NRC Field Observation on Fire Dampers, May 17, 2012

- BwAP 1100-5; Fire Department Response, Notification and Mutual Aid Agreements and Expected Chain of Events During a Fire; Revision 10
- BwAP 1100-16; Fire/Hazardous Materials Spill and/or Injury Response; Revision 28
- BwMP 3300-052A4; Work Performance Checklist for Damper 2VX14YB; Revision 2
- 0BwOS FP-Q5; Fire Protection Portable Fire Pump Installation/Removal; Revision 15
- CC-AA-209; Approved Fire Protection Program Design Change Impact Evaluation - EC 380047 Rev. 000 and EC380048 Rev. 000; Revision 1
- CC-AA-209; Fire Protection Program Configuration Change Review; Revision 2
- CC-AA-211; Fire Protection Program; Revision 4
- MA-BR-EM-5-00008; Fire Barrier Penetration Visual Inspection; Revision 4
- OP-AA-201-004; Fire Prevention for Hot Work; Revision 9
- OP-AA-201-008; Pre-Fire Plan Manual; Revision 3
- Braidwood Generating Station Pre-Fire Plan #53; Fire Area FZ 7.1-1; TB 401' Unit 1, BOP Battery Room
- Braidwood Generating Station Pre-Fire Plan #136; Fire Area FZ 11.4B-0; AB 383' Radwaste and Remote Shutdown Panel Vent/Control Room
- Braidwood Generating Station Pre-Fire Plan #138; Fire Area FZ 11.4A-2; AB 383' Unit 2 Aux. Feedwater Pump Diesel Room
- Braidwood Generating Station Pre-Fire Plan #151; Fire Area FZ 11.5A-0; AB 401' Radiological Instrument Calibration Room
- Braidwood Generating Station Pre-Fire Plan #157; Fire Area FZ 11.6-0; AB 426' Unit 1 Aux. Building General Area - North
- Braidwood Generating Station Pre-Fire Plan #161; Fire Area FZ 11.6A-0; AB 426' Laboratory HVAC Equipment Room
- Braidwood Generating Station Pre-Fire Plan #189; Fire Area FZ 16.1-1; Out 401' Unit 1 Refueling Water Storage Tank
- NFPA 90A Standard for the Installation of Air-conditioning and Ventilating Systems; 1999 Edition
- Braidwood Fire Protection Report; Table 2.4-4; Amendment 22 - December 2006
- Trace Sciences International Corp Material Safety Data Sheet; Zinc Acetate Dihydrate
- NUKEM GmgH Material Safety Data Sheet; Zinc Acetate Dihydrate
- Drawing M-97; Diagram of Diesel Generator Rooms 1A and 1B Ventilation System; May 19, 1977

1R07 Heat Sink Performance

- IR 1266679; Low Margin Issue with the Lake Ultimate Heat Sink; September 22, 2011
- WO 1477267; MM-Perform Maintenance Work for the UHS; October 5, 2011
- WO 1481572; MM Support Vendor Visual Inspection of UHS Bottom Elevation; November 10, 2011

1R08 Inservice Inspection Activities

- IR 1357998; A1R16 – Wesdyne CRDM Procedure Inconsistencies; April 24,2012
- IR 1356880; PT Indication Incorrect Disposition; April 12, 2012
- IR 1359195; Wesdyne Procedure EXE-UT-74 Essential Variable Not Addressed; April 26, 2012
- Dominion Engineering Calculation L-5545-00-01; Input to EPRI NDE Center Regarding Qualification of CRDM Nozzle NDE; October 3, 2006
- EC 381349; Unit 1 SG Degradation Assessment and JCO; Revision 0

- ER-AP-420-0051 (Attachment 5); Condition Monitoring/Operational Assessment Data Sheet; Revision 13
- EXE-UT-74 “Ultrasonic Examination of the Replacement Steam Generator Primary Manway Bolting at Byron and Braidwood,” Revision 2, FCN-01.
- MRS-TRC-2149; Use of Appendix H and I Qualified Techniques at Braidwood A1R16 Outage; April 3, 2012
- PDI-ISI-254-SE-NB; Remote Inservice Examination of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe and Safe End to Pipe Welds Using the Nozzle Scanner, Revision 2
- PDQS; WDI-STD-1040; March 4, 2010
- PDQS; WDI-STD-1041; March 2, 2010
- PQR 1-51A; December 28; 1983
- PQR 4-51A; September 12, 1986
- PQR A-003; February 8, 2000
- PQR A-004; February 8, 2000
- Radiographic Film Record And Reader Sheet For Weld FW-4 on Line 1SI08CA/CB-4”; April 12, 2012
- Radiographic Film Record And Reader Sheet For Weld FW-4a on Line 1SI08CA/CB-4”; April 29, 2012
- Radiographic Film Record And Reader Sheet For Weld FW-25 on Line 1SI08CA/CB-4”; April 12, 2012
- Radiographic Film Record And Reader Sheet For Weld FW-25b on Line 1SI08CA/CB-4”; April 29, 2012
- Rod Ticket; FW-4a; April 18, 2012
- VT-3 Visual Examination NDE Report- Reactor Vessel Support (1RC01R); October 21, 2010
- Welder D388; Qualification Record; April 20, 2012
- Welder K8914; Qualification Record; April 20, 2012
- WDI-TJ-011-03; Surface Examination Technique to Execute the Inspection on a J-Weld Wetted Surface for RPVH Vent Tube Penetration; Revision 0
- WDI-TJ-1028; ASME Section V, Article 14 Technical Justification for ET Inspection of Reactor Vessel Head; Revision 2
- WDI-STD-114; Reactor Vessel Head Vent Tube Inside Diameter and Carbon Steel Wastage ET Examination; Revision 11
- WDI-STD-1040 - Procedure for Ultrasonic Examination of Reactor Vessel Head Penetrations; Revision 7
- WDI-STD-1041; Reactor Vessel Head Penetration Ultrasonic Examination Analysis; Revision 6
- WDI-STD-1042; Procedure for Eddy Current Examination of Reactor Vessel Head Penetrations; Revision 2
- WDI-1304905-TJ-01; Technical Justification and Demonstration of Ultrasonic Examination of the Unit 1 Replacement Steam Generator Manway Studs at Byron and Braidwood; Revision 1
- WPS 8-8-GTSM; GTAW/SMAW P-8 to P-8 Material; Revision 2
- IR 1356880; Liquid Penetrant Indication Incorrect Disposition in A1R07; April 12, 2012
- NDE Report 98BR1-PT-002; Liquid Penetrant Examination Report for RHR Heat Exchanger Integral Welded Attachment Weld 1RHX-01-RHES-01; September 2, 1998
- NDE Report A1R15-PT-001; Liquid Penetrant Examination Report for RHR Heat Exchanger Integral Welded Attachment Weld 1RHX-01-RHES-01; September 29, 2010
- Procedure EXE-ISI-11; Exelon Liquid Penetrant Examination; Revision 2
- IR 01208120; NDE Indication Observed During MRP-192 Exam; April 26, 2011
- NDE Report A2R15-UT-028; Ultrasonic Examination Report for RHR Mixing Tee Weld 2RH-03-28; April 25, 2011

- EC No. 0000384283; Fatigue Crack Growth Evaluation of Flaw In Braidwood U-2 RHR Mixing Tee Weld; April 30, 2011
- Procedure ER-AA-335-010; Guidelines For ASME Code Allowable Flaw Evaluation and ASME Code Coverage Calculations; Revision 2
- Procedure ER-AA-335-1008; Code Acceptance and Recording Criteria For Nondestructive (NDE) Surface Examination; Revision 2
- NDE Report A1R16-UT-004; Ultrasonic Examination Report for 1RC-14-10/RC; April 18,2012
- NDE Report A1R16-UT-005; Ultrasonic Examination Report for 1RC-14-11/RC; April 18,2012
- NDE Report A1R16-UT-006; Ultrasonic Examination Report for 1RC-14-14/RC; April 18, 2012
- NDE Report A1R16-PT-001; Liquid Penetrant Examination Report for CVCS Penetration to Pipe Weld 1CV-01-15; April 19, 2012
- Procedure ER-AA-335-031; Ultrasonic Examination of Austenitic Piping Welds; Revision 4
- Procedure ER-AA-335-002; Liquid Penetrant Examination; Revision 5
- IR 1121978; Boric Acid at 1LT-0436 Manifold Valve Packing; October 4, 2010
- IR 1190678; 1PS22A Dry Boric Acid on Fitting; March 10, 2011
- IR 1228201; Dry Boric Acid at 1RH01PA Pump Bowl; June 13, 2011
- IR 1267786; Dry Boric Acid at Valve Packing on 1CV7037; September 25, 2011
- Work Request 00371307; Boric Acid at 1RH01PA Pump Bowl; June 14, 2011
- Work Request 00362433; 1PS22A Dry Boric Acid on Fitting; March 25, 2011
- IR 1101249; 1CS01SA Eductor Suction Flange Dry Boric Acid Deposit; August 12, 2010
- BAE 01101249-02; Boric Acid Evaluation for 1CS01SA Eductor Suction Flange; March 2, 2011
- IR 1127299; Body to Bonnet Leakage on Valve 1SI8818A; October 16, 2010
- BAE 1127299; Attachment 3 BACC Evaluation for 1SI8818A; December 15, 2010
- IR 1127298; Body to Bonnet Leakage on Valve 1SI8818C; October 17, 2010
- BAE 1127298; Attachment 3 BACC Evaluation for 1SI8818C; December 14, 2010
- Procedure ER-AP-331-1002; Boric Acid Corrosion Control Program Identification Screening and Evaluation; Revision 7
- Procedure ER-AA-335-015; VT-2 Visual Examination; Revision 11
- IR 1121928; 1RC01BA Upper Lateral Support Shim Pack Additional Damage; October 4, 2010
- WO 01375122; CM-1RC01BA Repair Upper Lateral Support Shim Pack Bolting; October 10, 2010
- IR 1223240; A2R15 SG Tube Plugging Performed Without Section XI Repair Plan; June 1, 2011
- EC 374685; Applicability of Byron EC 362408 to Braidwood Unit 1 and 2, “Westinghouse SG Mechanical Tube Plug Qualification Document for ASME Section XI 2011 Edition Through 2003 Addenda Unit 1 and 2”; Revision 0
- IR 1167565; Active Leakage on 2DG01KB-A Identified During VT-2; January 27, 2011
- IR 1206632; Unit 2 RPV CRDM Pen No. 23 Special Interest Indications; April 23, 2011
- IR 1207690; SG Foreign Object Service Plan Revision A2R15LL; April 26, 2011
- IR 1302620; Thermal Conductivity Degradation Impact on LOCA Analysis; December 14, 2011
- IR 1122347; Containment Liner Metal Reduction Exceeding 10 Percent Metal Loss; October 5, 2010
- EC 375105; Analysis No. 5.2.6-BRW-09-0041-S, “Evaluation of Braidwood Unit 1 Containment Liner Plate Due to Identified Gouges”; April 14, 2009
- EC 381805; Analysis No. 5.2.6-BRW-10-0174-S, “Documentation of Liner Plate Inspection Criteria and Inspection Results for Outage A1R15”; October 17, 2010
- EC 381781; Evaluation of Containment Liner Metal Reduction Exceeding 10 Percent as Documented in IR’s 1122347 and 1123596 During A1R15; November 8, 2010
- Procedure ER-AP-335-001; Bare Metal Visual Examination for Alloy 600/82/182 Materials; Rev. 2

- IR 1359227; 1RC01R Pen. 77 Failure to Remove Insulation for Exam; April 26, 2012
- WO 01229678; Visual Examination Per GL 88-05; September 14, 2010
- WO 00900382; Unit 1 Reactor Vessel Head Visual Exam; October 8, 2007
- IR 1104415; 1RC01R (Evidence of Boric Acid Leakage on Mechanical Connection of Pen. 77); August 16, 2010
- IR 1354024; Dry Boric Acid Ring Found on Reactor Vessel Head Conoseal; April 16, 2012
- IR 1354205; Dry Boric Acid Residue Found on Reactor Vessel Head Insulation; April 16, 2012
- IR 01359227; NRC ID: 1RC01R Pen. 77 Failure to Remove Insulation for Exam; April 26, 2012
- WO 01286769 Task 29; Repair Boric Acid at CETC Pens. 75 and 77; October 9, 2010
- IR 1361504; A1R16 RPV Head Bare Metal Visual Inspection Results; April 22, 2012
- IR 1362989; NRC Questions Regarding Bare Metal Visual RPV Head Inspections; May 2, 2012
- NDE Report A1R16-VT-044; Bare Metal Visual Examination Report for Unit 1 RPV Head; April 22, 2012
- Procedure ER-AA-330-001; Section XI Pressure Testing; Revision 10
- Procedure ER-AP-331; Boric Acid Corrosion Control (BACC) Program; Revision 6
- Procedure ER-AP-331-1001; Boric Acid Corrosion Control (BACC) Inspection Locations, Implementation and Inspection Guidelines; Revision 6
- EC 388846; A1R16 Reactor Head Penetration Nozzle Repair; Revision 0
- Procedure GQP-9.7; Solvent Removable Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding (50º - 125ºF); Revision 15
- IR 1362380; New Thermal Sleeve Guide Pads Cobalt Content Exceeds Spec; May 3, 2012
- Ultrasonic Examination Data Sheet for Penetration 69; May 6, 2012
- Ultrasonic Examination Data Sheet for Penetrations 1-9; May 2, 2012
- NDE Report 903581-01; Liquid Penetrant Examination of Pen. 69 J-Groove Weld Surface Post Overlay Repair; May 5, 2012
- NDE Report 903581-02-03; Liquid Penetrant Examination of Pen. 69 OD Weld Overlay and J-Groove Weld-to-Tube OD Tie-in Post Overlay Repair; May 5, 2012
- NDE Report 903581-02-03; Liquid Penetrant Examination of Pen. 69 OD Weld Overlay and J-Groove Weld-to-Tube OD Tie-in Post Overlay Repair; May 6, 2012
- IR 1357298; UT Indication on Unit 1 CRDM Penetration 69; April 23, 2012
- Ultrasonic Examination Data Sheet for Penetration 28; April 22, 2012
- Procedure WDI-STD-1040; Ultrasonic Examination of Reactor Vessel Head Penetrations; Revision 7
- Procedure WDI-TJ-1028; ASME Section V, Article 14, Technical Justification for Eddy Current Inspections of RVH; Revision 2
- Procedure WDI-STD-1042; Eddy Current Examination of Reactor Vessel Head Penetrations; Revision 2
- Procedure WDI-STD-101; RVHI Vent Tube J-Weld Eddy Current Examination; Revision 9
- Procedure WDI-ET-004; IntraSpect Eddy Current Analysis Guidelines; Revision 15
- Procedure ER-AA-335-F-02; RVHI Vent Tube ID and CS Wastage Eddy Current Examination; Revision 0
- WCAP-16401-P; Technical Basis for Repair Options for Reactor Vessel Head Penetration Nozzles and Attachment Welds: Byron and Braidwood Units 1 and 2; Revision 0
- WPS 8-43 RVHP-OV; ASME Section XI Welding Procedure Specification for Braidwood Pen. 69 Repair Weld Overlay; Revision 5
- EC 388846; A1R16 Reactor Head Penetration Nozzle Repair; April 27, 20121R11 Licensed Operator Requalification Program

1R12 Maintenance Effectiveness

- IR 1019474; 1WE14MB Needs Label; January 21, 2010
- IR 1046560; 1WE11MA Needs to be Labeled; March 23, 2010
- IR 1047811; EO Rounds Identified 1WE01A Sightglass Needs to be Labeled; March 23, 2010
- IR 1156719; 1WE09M Needs to be Cleaned; December 29, 2010
- IR 1116439; Aux Bldg Roof Drains Clogged; September 22, 2010
- IR 1186278; 0B WE Low Level Alarm Comes in Early @ 0PL01J; March 22, 2011
- IR 1216779; 0PI-WE008 is Pegged High; May 16, 2011
- IR 1247875; Auxiliary Building Roof Drain Clogged - Standing Water; August 4, 2011
- IR 1275506; Drain Line is Plugged at 2WEE29B; October 12, 2011
- IR 1297897; 0WE02MA Receiving More Input than Normal, Approx 10% Per Day; December 5, 2011
- IR 1339898; S/R 00073205 Improperly Retired AB Floor Drain PMS; March 12, 2012
- IR 1352822; Question Relating to Auxiliary Building Floor Drains; April 11, 2012
- IR 1364352; 1A2012 - NRC Green NCV - MEER Floor Drain/VA Plenum; May 9, 2012
- WO 99088596; Drain is Plugged, Needs Rodding
- WO 99098291; 1LS-WE003 Aux Building Equip Drain Collection Sump Level Switch
- WO 99099835; 2LS-WE003 Equipment Drain Collection Sump Level Switch
- WO 99149483; Hydrolaze Stopped 1A SX PP Bedplate Drain Line
- WO 99195796; This Line was Just Hydrolazed, Line Still Plugged on RTS
- WO 99200837; Inspect Aux Feed Tunnel Flr Drn Strainer Baskets
- WO 99223207; Drain Line Partially Plugged;
- WO 99223807; Drain Line Slight Flow Indicator Dirty, Please Clean
- BwOP WX-73; Auxiliary Building Floor Drain Tank Transfer to the Regeneration Waste Drain Tank 0WX25T or Chem/Regen Waste Drain Tank 0WX08T; Revision 5
- BwMS 3350-009; Auxiliary Building Floor Drain Strainer Basket Surveillance; Revision 9

1R13 Maintenance Risk Assessments and Emergent Work Control

- IR 1361344; 1B CC Pump Casing Drain Through-Wall Leak; May 2, 2012
- ER-AA-600-1011; Risk Management Program; Revision 11
- ER-AA-600-1015; FPIE PRA Model Update; Revision 13
- OP-AA-108-117; Protected Equipment Program; Revision 2
- PC-AA-1014; Risk Management; Revision 2
- Paragon Predetermined Protection Scheme; Model BW2-M-6F-001; April 30, 2012
- U1 RWST Makeup Source; A1R16 451' MCR; April 15, 2012
- Braidwood A1R16 Refueling Outage Turnover; April 30, 2012
- Braidwood PRA Application Notebook BW-CRM-107; A1R16 Bus 141 Outage PRA Assessment; Revision 0

1R15 Operability Determinations and Functionality Assessments

- IR 1332785; Part 21 for Rosemount Model 1154 Series H Transmitters; February 27, 2012
- IR 1350199; Mounting Hardware Discrepancy with Unit 2 EDG Speed Switches; April 4, 2012
- IR 1350335; Mounting Hardware Discrepancy 2B DG Speed Switches; April 4, 2012
- IR 1350370; Mounting Hardware Discrepancy 1A DG Speed Switch; April 4, 2012
- IR 1356570; FME Found in 1A Containment Recirculation Sump; April 20, 2012
- IR 1361456; Unit 1 Refuel Machine Trolley Wheels Identified Off Rails; May 2, 2012
- IR 1366161; Results of NRC Containment Walkdown; May 11, 2012
- IR 1371387; 1A MSIV Accumulator Pressure Low Alarm; May 28, 2012

- IR 1372307; NRC Question on 1A MSIV; May 30, 2012
- IR 1372598; MSIV Administrative Control Gap; May 30, 2012
- IR 1372887; Extension Request for Op Eval Under IR 1370850; May 30, 2012
- IR 1375940; NRC Question Regarding TS 3.6.3 and TS 3.7.2; June 8, 2012
- IR 1383367; NRC Resident Questions Answer to Question #2 of Safety Eval; June 5, 2012
- Safety Data Sheet; PIG Blocker Family Products (MSD-043); March 7, 2012
- Chemical Compatibility Guide for PIG Leakblocker Dikes; February 4, 2011
- PORC Summary for Proposed License Amendment Request to Revise TS 5.3.1 for Education and Experience Eligibility Requirements for Licensed Operators
- Revision 5 of Braidwood Station EALs
- LER 05000456/2012-002-00; Reactor Pressure Vessel Head Control Rod Drive Mechanism Penetration Nozzle Weld Indication Attributed to Primary Water Stress Corrosion Cracking; April 23, 2012
- 1BwEP-3; Steam Generator Tube Rupture; Revision 206 WOG 2
- 1BwOA ELEC-5; Local Emergency Control of Safe Shutdown Equipment; Revision 103
- 0BwOA PRI-5; Control Room Inaccessibility; Revision 101
- 1BwOA PRI-5; Control Room Inaccessibility; Revision 105
- ER-AA-335-001; Liquid Penetrant Examination Data Sheet A1R16-116 Unit 1 (WO 1129387-13); May 3, 2012
- OP Eval 07-008; Potential Issue with Westinghouse Modeling of SG PORV Relief Capacity (IRs 662874, 1021062, 1359217); Revision 5
- OP Eval 12-003; Mounting Screws for Dynalco DG Speed Switches are Non-Conforming (IR 1350199); Revision 0
- OP Eval 12-004; Review of Byron/Braidwood 426' Level Turbine building HELB Model; June 5, 2012
- WO 01544680; 1A MSIV Accumulator Pressure Low Alarm; May 30, 2012

<u>1R19 Post-Maintenance Testing</u>

- EC 382520; NRA Scaling (1TY-0411A1) for Replacement of NR RTD 1TE-0411A1/1TE-0410A1 (Loop 1A RCS Hot Leg A1 Temperature); Revision 000
- EC 389349; Determine PMT Requirements for 1A MSIV
- WO 01316660 01; HGR, 2FC02001R Not Loaded (2FC01P Does Not Meet D.B. Limits); March 19, 2010
- WO 01400304 03; Replace RTS 1TE – 0411A-1/1TE-0410A-1; May 26, 2012
- WO 01401722 01; M4 1SI8919A - Disassembly, Inspect and Repair; April 26, 2012
- WO 01401722 03; OPS-PMT 1SI8819B, Verify No Leaks, 1BwOSR 3.4.14.1; Finished May 2, 2012
- WO 01401722 04; OPS-PMT 1SI8919A, Leak Check, 1BwOSR 5.5.8.SI-10A; Working May 1, 2012
- BwAP 1205-3T1; Braidwood Station Qualified Review Form - Revise TRM TLCO 3.3.y, "ESFAS Instrumentation"; May 30, 2012
- BwISR 3.3.1.15-4; RCS Narrow Range RTD Response Time Measurement; Revision 6
- Braidwood Inservice Testing Bases Document; 1SI8919A; Revision 1
- CC-MW-112-1001; TCCP Removal WO 1390316-01; Revision 10
- CC-MW-112-1001; TCCP Installation WO 1390277-01; Revision 10
- MA-AA-716-010-F-01; Work Package 1316660-01; Added to Step 5.4 & 5.6 to Remove Coupling Guard; Revision 0
- WC-AA-104; WO 1316660-01, Adjust Hanger; Revision 15
- Analysis and Measurement Services Corporation; Response Time Testing of Primary Coolant RTDs at Braidwood Unit 1; May 2012

- 1MS001A; EQ Actuator Hydraulic MSIV - 2MS001A Active Side 4-Way Valve Replacement Unit 1
- Drawing D-10239; Spec L-2756 Schematic for A/DV Self Contained Hydraulic Actuator; September 15, 1977

1R20 Refuel Outage Activities

- IR 1358180; Level 3 Personnel Contamination Event 12-006; April 24, 2012
- IR 1358371; Level 1 PCE 12-008 - A1R16 MSIP Project (Westinghouse); April 25, 2012
- IR 1358585; NOS Ids Inadequate Fall Protection for MSIP Workers; April 25, 2012
- IR 1358593; NOS Id Unsafe Working at Height Practices Above RX Cavity; April 25, 2012
- IR 1358611; NRC Id'd Issues; April 25, 2012
- IR 1358667; Personnel Contamination Event - LOG# 12-010; April 25, 2012
- IR 1358670; Personnel Contamination Event 12-011; April 25, 2012
- IR 1358689; Determine How to Get 1SW23B Valve Repaired; April 25, 2012
- IR 1358712; 1A DG Unexpected Low JW Pressure Alarm; April 25, 2012
- IR 1358715; 1A DG Crankcase Pressure Indications Do Not Agree; April 25, 2012
- IR 1358718; BwAR Misleading, Has Insufficient Information; April 256, 2012
- IR 1358723; D215 (D-549) Left Unsecured by Stone Webster Contractor; April 26, 2012
- IR 1358728; Potential Dry Boric Acid Deposits in 1C RCFC Plenum; April 26, 2012
- IR 1358731; WO 1369074-01; April 26, 2012
- IR 1358733; 2BwOSR 3.8.1.2-2 Changes Needed; April 25, 2012
- IR 1358743; A1R16 MSSV Trevi Testing Summary and EOC; April 12, 2012
- IR 1358748; Breaker Found Out of Trip Tolerance on MCC 13301-82; April 26, 2012
- IR 1358749; As Found Condition - Wiring Landed Where None Shown on Print; April 26, 2012
- IR 1359439; FME Concern 1FW102B Vent Cap Removed with No FME Barrier; April 27, 2012
- IR 1359649; NOS - Review 2/28-29/12 NSRB Meeting Minutes for Actions; April 27, 2012
- IR 1359650; RX Services - Review 2/28-29/12 NSRB Meeting Minutes for Actions; April 27, 2012
- IR 1359653; Reg. Assur. - Review 2/28-29/12 NSRB Meeting Minutes for Actions; April 27, 2012
- IR 1359662; NOS ELV - Inadequate Measures Taken to Mitigate Fall Hazards; April 27, 2012
- IR 1359732; FME Identified Within RX Cavity Sandboxes; April 27, 2012
- IR 1359798; No Final FME Inspection Steps - FME Found and Recovered; April 27, 2012
- IR 1359900; FME Found in 1B FW Pump Suction Strainer; April 21, 2012
- IR 1359901; FME Found in 1A FW Pump Suction Strainer; April 21, 2012
- IR 1359914; Items in Unit 1 Transformer Yard and Secured Material Zone; April 28, 2012
- IR 1359933; NOS Ids FME Buffer Zone on Refuel Floor Compromised; April 28, 2012
- IR 1359948; Abnormal Findings During Disassembly of 1CV01PA Seals; April 28, 2012
- IR 1359979; Level 1 PCE Log #12-020 (Shaw During SG Demob); April 28, 2012
- IR 1360024; 1B RE Pump is Cavitating; April 29, 2012
- IR 1360029; Possible Water Intrusion into the Flex Conduit for 1PT-0455; April 29, 2012
- IR 1360030; Possible Water Intrusion into the Flex Conduit for 1LT-0501; April 29, 2012
- IR 1362471; NOS Id Repeat Concern with Combustibles Stored in Stairwell; May 3, 2012
- IR 1362531; EDG Extended Completion Time Regulatory Commitments; May 4, 2012
- IR 1362669; Near Miss on High Radiation Area Entry; May 3, 2012
- IR 1362696; NRC Questions Regarding Unit 2 Calorimetric Program; May 4, 2012
- IR 1362699; Protective Strategy Enhancements; May 4, 2012
- IR 1362728; TCP's > 90-Days Due to Project Rescheduling; May 1, 2012
- IR 1362741; Operational Risk WO Tasks in Summer Need Ops Screening; May 4, 2012
- IR 1362840; Single Siren Failures (BD01, BW10, BW23, BW25); May 4, 2012

- IR 1362845; Pressurizer Heater 64 Indicates “Open”; May 4, 2012
- IR 1362863; A1R16LL - Loss of 34kV Line Feed Impact to Site; May 4, 2012
- IR 1363885; Electronic Dosimeter Dose Rate Alarm; April 20, 2012
- IR 1362888; Procedure Change Requested for 1/2BwOL TRM 3.5.A; May 4, 2012
- IR 1362923; UHS Level at 6.2 Feet and Being Logged Shiftly; May 5, 2012
- IR 1362936; Environmental Concern - Water Lapping Onto Spillway; May 5, 2012
- IR 1362959; Eval 12-031 Extended Past 60 Day Start Date to Obtain Data; May 5, 2012
- IR 1362965; Appendix R Light 1LL1-103 Not Functional; May 5, 2012
- IR 1362966; Appendix R Light 1LL1-028 Not Functional; May 5, 2012
- IR 1363019; NOS Id: 1B CC Pump Casing/Drain Piping FME Issue; May 5, 2012
- IR 1363021; Revise SX ASME Procedures for Response Time Test Enhancement; May 5, 2012
- IR 1363044; NOS Id - Untimely Communication of Issue; May 3, 2012
- IR 1363047; NOS Id - BwMP 3100-009 Missing NEI Requirement; May 5, 2012
- IR 1363049; Vehicle and Cart Left in the Secured Material Zone by Unit 1; May 5, 2012
- IR 1363059; 1CV131 Valve Failed Closed; May 5, 2012
- IR 1363118; No Preventive or Predictive Maintenance for PR Detectors; May 6, 2012
- IR 1363135; 1FC01P Possible Extent of Condition to IR 1362960; May 6, 2012
- IR 1363136; 2FC01P Possible Extent of Condition to IR 1362960; May 6, 2012
- IR 1363138; Replacement of 2A CC Pump Drain Line; May 6, 2012
- IR 1363140; Replacement of the 2B CC Pump Drain Line; May 6, 2012
- IR 1363148; A1R16LL - Restoring PBIS 14494 & 14495 Scheduled > 90 Days; May 6, 2012
- IR 1363154; Ultrasonic Results show Minor Change in CRDM Pen 66; May 6, 2012
- IR 1363159; PT Indications Identified on Repair Weld for Penetration 69; May 6, 2012
- IR 1363207; 1CV067D Leaks During PMT; May 6, 2012
- IR 1363241; Unit 1 Hotwell Level Exceeded 45”; May 6, 2012
- IR 1363253; 1D RC Loop Fill Suspended Due to 1CV067D Leak; May 6, 2012
- IR 1363268; 1A Seal Injection Line Leak - 1CV067A; May 6, 2012
- IR 1363336; Dry Boric Acid at the Valve Packing on the 1SI084; May 7, 2012
- IR 1363344; Dry Boric Acid at the Valve Packing on the 1CV8321B; May 7, 2012
- IR 1363372; Inner RPV Head O-Ring Installation was Difficult; May 7, 2012
- IR 1366343; Face-to-Face Fatigue Assessment Not Performed for Waiver; April 29, 2012
- 1BwGP 100-2; Plant Startup; Revision 33
- 1BwGP 100-3; Power Ascension 5 Percent to 100 Percent; Revision 56
- LS-AA-119; 10CFR 26 Work Hour Limits Waiver-April 29, 2012; Revision 9
- 10 CFR Part 16; Fitness for Duty Programs
- Drawing M-1FW070145; Braidwood Unit 1 Nuclear Safety-Related; Revision F
- Drawing M-1FW080165; Braidwood Unit 1 Nuclear Safety-Related; Revision K
- Drawing M-1MS01088S; Braidwood Unit 1 Nuclear Safety-Related; Revision G

1R22 Surveillance Testing

- IR 1352831; 1MS015D MSSV Lifted Outside 3 Percent Range (Pre A1R16); April 11, 2012
- IR 1354838; 1SD005B Did Not Open; April 17, 2012
- IR 1355099; 1SD002B Failed to Auto Close Suspect K613B Relay; April 17, 2012
- IR 1356743; Braidwood and Byron EDG Full Load Reject Practice Review; April 20, 2012
- IR 1363354; Sequencing 1A AF Pump Caused Abnormal DG Voltage Response; May 7, 2012
- IR 1370575; Potential U1 RCS Leak In/Out of Containment; May 25, 2012
- BwMSR 3.7.1.1; Main Steam Safety Valves Operability Test (Setpoint Verification Using the Furmanite Trevitest System); Revision 4

- 1BwOSR 3.3.2.9-2; Unit 1 - Train B Safety Injection Manual Initiation and Phase "A" Containment Isolation Manual Initiation Surveillance; Revision 21
- 1BwOSR 3.8.1.13-2; 1B Diesel Generator Bypass of Automatic Trips Surveillance; Revisions 9, 10, and14
- 1BwOSR 3.8.1.19-1; 1A Diesel Generator ECCS Sequencer Surveillance; Revision 15
- EC 375726; IR 786415 - Potential Missed TS Surveillances; June 12, 2008
- EC 388480; Evaluation of Diesel Generator Full Load Reject at Rated Power Factor; April 19, 2012
- NEI 01-03; Chapter 3 Surveillance Requirements Content; November 2001
- WO 1378018 01; U1 Trn B SI Manual Init and Phase A Cnmt Isol Mnl I; April 18, 2012
- LS-AA-104-1001; Unit 0 EC 375726, DRP #13-020; Modification to VA Bypass Damper Close and VA Fan Trips; Revision 0.0.0
- KCI Engineering Consultants Project #425-019; Determine Expected Maximum Peak Voltage Magnitude on Full Load Reject Test; Revision 0
- BwAP 1300-6T1 Special Procedures, Tests, or Experiments Request Form; 1B DG Full Load Reject at Rated Power Factor; Revision 10
- 1BwOSR 3.4.13.1; Unit 1 Reactor Coolant System Water Inventory Balance Surveillance; Revision 30
- Drawing M-95; Diagram of Auxiliary Building HVAC System (VA); November 15, 1977
- Drawing M-4095-0VA07; Control Logic Diagram Non-Accessible Area Exhaust Plenum Booster Fan & Dampers Control; September 28, 1982
- Drawing M-4095-0VA08; Control Logic Diagram Non-Accessible Area Exhaust Plenum Booster Fan & Dampers Control; October 4, 1982
- Drawing 20E-1-4040DG01; Schematic Diagram Diesel Generator 1A Feed to 4.16KV ESF Swgr. Bus 141 ACB #1413; April 7, 1978
- Drawing 20E-1-4040DG02; Schematic Diagram Diesel Generator 1B Feed to 4.16KV ESF Swgr. Bus 142 ACB #1423; June 26, 1978

<u>2RS1 Radiological Hazard Assessment and Exposure Controls</u>

- IR 1358180; Level III, 500k dpm Personnel Contamination Event; April 24, 2012
- IR 1358667; Personnel Contamination of 250k dpm Event in the Reactor Cavity; April 25, 2012
- IR 1356175; NRC Identified; Discrepancy with RWP Set-points; April 19, 2012
- IR 1355651; RWP's ED Setpoints have Not been Sufficient for NRC Walkdown; April 18, 2012
- IR 1356697; ED Dose Rate Alarm Received During System Leak Inspections; April 20, 2012
- IR 1355225; Personnel Contamination on a Mechanic after Exiting the Fuel Handling Building; April 17, 2012
- IR 1340958; Radioactive Source Identified with Ripped Mylar Covering; February 13, 2012
- IR 1349859; Safety Issues – Supervisor was Not Responsive to Safety Issues; March 29, 2012
- IR-1355225; Personnel Contamination on Index Finger at the Fuel Handling Building after Manipulating the Crane; April 17, 2012
- IR 1352325; Outside Radioactive Material to be Disposition; April 10, 2012
- IR 1350758; Radiation Source Found by Technician; April 5, 2012
- RP-AA-870-1002; Use of Vacuum Cleaners in Radiologically Controlled Areas; Revision 3
- RP-AA-460-002; Additional High Radiation Exposure Control; Revision 0
- RP-AA-210; Dosimetry Issue, Usage and Control; Revision 21
- RP-AA-460; Controls for High and Locked High Radiation Areas; Revision 21
- RP-AA-700-1501; Operation and Calibration of Model SAM-9/11 Small Articles Monitors; Revision 1b
- RP-AA-700-1240; Argos-5AB Zeus Daily Source Check and Surveillance; Revision 0a

2RS2 Occupational ALARA Planning and Controls

- IR 1352252; January 2012 Online Dose Performance; February 6, 2012
- IR 1352272; February 2012 Dose Performance; March 16, 2012
- RP-AA-401; Operational ALARA Planning and Control; Revision 13
- RWP-10013206; ALARA-10013206; A1R16; Reactor Nozzle MSIP; Revision 1
- RWP-10013189; ALARA-10013189; Cavity Decontamination; Equipment Staging; Set-up and Removal and Associated Activities; Revision 1
- RWP-10013223; ALARA-10013223; Steam Generator Manway – Diaphragm and Bolt Cleaning; Revision 1
- RWP-10013126; ALARA-10013126; Reactor Head Component Disassembly and Reassembly Included Lift Prep; Revision 0
- RWP-10013221; ALARA-10013221; Steam Generator Secondary Side Pre-Heater and FOSAR Inspection; Revision 0
- RWP-10013218; ALARA -10013218; Steam Generator Eddy Current Testing and All Tube Repairs; Revision 04OA1; Performance Indicator Verification

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

- RP-AA-870-1003; Testing Portable HEPA Filter Units; Revision 1
- RP-AA-700-1301; Calibration, Source Check, Operation and Set-up of the Eberline Beta Monitor, AMS-4; Revision 0
- IR 1360309; Greater Than 0.3 DAC Observed During Core Barrel Lift; April 29, 2012
- RP-AA-440; Respiratory Protection Program; Revision 10
- RP-AA-442; Selection of Respiratory Protection for Non-Radiological Use; Revision 4
- RP-AA-443; Quantitative Respiratory Fit Testing; Revision 11
- RP-AA-444; Controlled Negative Pressure (CNP) Fit Testing; Revision 3
- RP-AA-825-1013; Operation and Inspection of the 3M Air-Mate Hood and PAPR Blower; Revision 3
- RP-AA-825-1020; Operation and Use of Airline Supplied Respirators; Revision 0
- RP-AA-825-1035; Issue and Controlled of Respirators; Revision 1
- RP-AA-870-1002; Use of Vacuum Cleaners in Radiologically Controlled Areas; Revision 3
- RP-AA-870-1001; Set-Up and Operation of Portable Air Filtration Equipment; Revision 2
- PSI-0047937; Quarterly Service Air and Self-Contained Breathing Apparatus Test; March 14, 2012
- RP-AA-825; Maintenance, Care and Inspection of Respiratory Protective Equipment; Revision 4
- NUCON 13BRAID5076/1; NUCON International; Charcoal Penetration Efficiency per ASTM D3808-1989; June 4, 2012
- IR 1377596; Radwaste Building Low DP Alarm Noted During a Walkdown; June 13, 2012
- IR 1378234; NRC Baseline Inspection on Determination the Shelf Life and Field Life of Charcoal; June 15, 2012
- IR 1012421; Determining the Shelf Life and Field Life of Charcoal; January 5, 2010

2RS4 Occupational Dose Assessment (71124.04)

- RP-AA-302; Determination of Alpha Levels and Monitoring; Revision 4
- RP-AA-700-7237; Performance of Smear Testing for Automated Contamination Monitors; Revision 0
- RP-AA-221; Whole Body Count Data Review; Revision 1
- RP-AA-230; Operation of the Canberra Fastscan Whole Body Counter; Revision 0

- RP-AA-220; Bioassay Program; Revision 8
- RP-220-1001; Collection and Handling of In-vitro Bioassay Samples; Revision 0
- RP-AA-220; Intake Investigation Form; BABIA3249; Exposure to Tritium Greater than 0.3 DAC; March 28, 2011
- RP-AA-220; Intake Investigation Form; DURKI7001; Exposure to Airborne Tritium in Excess of 0.3 DAC in U-1 and U-2 Containment; March 15, 2011
- RP-AA-220; Intake Investigation Form; COVAR6781; Exposure to Airborne Tritium in Excess of 0.3 DAC in U-1 and U-2 Containment; September 13, 2011
- RP-AA-222; Methods for Estimating Internal Exposure from In-vivo and In-vitro Bioassay data; Revision 3
- RP-AA-203-1001; Personnel Exposure Investigations; Revision 6
- RP-AA-210; Dosimetry Issue, Usage, and Control; Revision 22
- RP-AA-215; Calculating and Crediting Dose from Noble Gas Exposure; Revision 0
- RP-AA-223; Calculating and Crediting Dose from Tritium Exposure; Revision 0
- RP-AA-250; External Dose Assessments from Contamination; Revision 5
- RP-AA-270; Prenatal Radiation Exposure; Revision 6
- RP-AA350; Personnel Contamination Monitoring, Decontamination, and Reporting; Revision 10a
- Forty-Two Samples of Planned Electronic Dosimeters Alarms Issues between Year 2012 and 2011
- RP-AA-203-1001; “Sample” Personnel Exposure Investigation for the Following Reports; MAJOR6474; NACE41842; 485874; 009830; SCHOO3317; SCHWA1649;FURMA9238;
- IR 1358667; Personnel Contamination of 250k dpm Event in the Reactor Cavity; April 25, 2012
- IR 1356175; NRC-Identified; Discrepancy with RWP Setpoints; April 19, 2012
- IR 1348185; Error Identified in 2010 REIRS Report (Dose Report); March 30, 2012

<u>2RS7 Radiological Environmental Monitoring Program</u> (71124.07)

- EX001-3P50BRAID-05; Teledyne Brown Engineering; Report of Analysis/Certificate of Conformance; March 26, 2012
- CY-BR-170-301; Braidwood Station's ODCM; Revision 6
- RP-AA-605; Waste Stream Results Review; Attachment 2; October 3, 2011
- 2011 Annual Radiological Environmental Operating Report; May 14, 2012
- 2011 Radioactive Effluent Release Report; April 26, 2012
- ER-AA-5400-1002; Exelon Buried Piping Examination Guide; Revision 4
- IR 1378048; NOS ID: TEMP Sample Point Observations; June 14, 2012
- CY-AA-170-1000; Radiological Environmental Monitoring Program and Meteorological Program Implementation; Revision 5
- CY-AA-170-0100; Personnel Familiarization Guide for REMP, Met, RGPP, and REC Program; Revision 3
- CY-AA-170-100; REMP; Revision 2
- CY-AA-170-000; REMP; Revision 5
- IR 1378494; NOS ID Chem Oversight of Service Providers Not Performed; June 15, 2012
- IR 1380105; NOS ID Familiarization Guides Not Completed or Late; June 20, 2012
- IR 1378048; REMP Sample Point Observations; Relocation of Tree in Gardner Park at Sample BD-05; June 14, 2012

<u>4OA1 Performance Indicators</u>

- LS-AA-2140; NRC Occupational Exposure Control Effectiveness; Revision 5
- LS-AA-2140; Attachment Monthly Data Elements; January 2011 through April 2012

4OA2 Identification and Resolutions of Problems

- IR 1358191; MCR Annunciator Problem (0-38-B3) TSC Battery Charger Trouble; April 25, 2012
- IR 1358493; Unexpected Annunciator When Unit 1 N-41 Placed in Bypass; April 24, 2012
- IR 1363728; AF005D Open Limit SW Flex Conduit in Contact with Tube Track; May 8, 2012
- IR 1363731; Need Eng Approval of SOR Report 9058-119, Rev 3; May 8, 2012
- IR 1363758; 2FW035A Occasional Erratic Behavior; May 2, 2012
- IR 1363774; Instrument Air Leak on IA to 1CV8389B; May 8, 2012
- IR 1363778; 1A DG Sequence Timer T7A Requires Adjustment; May 7, 2012
- IR 1363782; 1A DG Sequence Timer T6A Needs Adjustment; May 7, 2012
- IR 1363797; Unit 1 S/G PORV Power Modification Issues/Confusion; May 8, 2012
- IR 1363819; LEFM Trouble BwAR Has Wrong SER Point Listed; May 8, 2012
- IR 1363830; FME - A1R16LL Foreign Material Recovered from Main Condenser; May 4, 2012
- IR 1363876; Unexpected Alarm 1C SG PORV Trouble; May 8, 2012
- IR 1364132; NRC ID: Variance in Adverse Weather Reports; May 6, 2012
- IR 1364178; Improper Alarms Lit on Annunciator Box 1 in1PA30J; May 8, 2012
- IR 1364182; Thimble Has Slight Bend 2 Inches Below Seal Table; May 9, 2012
- IR 1364204; Apparent Annunciator Problem (1Pa30J); May 9, 2012
- IR 1364207; Level 1 PCE Log # 12-024 (Shaw BM Working U1 Reactor Cavity); May 9, 2012
- IR 1364218; Level 1 PCE Log # 12-025 (Shaw Working in Unit 1 RX Cavity); May 9, 2012
- IR 1365222; Large Weed or Tree Growing from Under Unit 1 CST; May 8, 2012
- IR 1365280; 1D Steam Generator PORV Trouble Alarm 1-15-D10 in Alarm; May 11, 2012
- IR 1365303; 4Q2010 - NRC Green NCV - OPEX Review of 1PB Ground Faults; January 20, 2011
- IR 1365356; 1MS001A Fully Closed During Partial Stroke of Standby Train; May 11, 2012
- IR 1365360; Possible Applicability of Byron IR to Braidwood Station; May 11, 2012
- IR 1365366; Unauthorized TCCP Used to Support Flex Conduit; May 11, 2012
- IR 1365407; Containment Coating A1R16 Exam Results; May 11, 2012
- IR 1365425; TSC/SEC Battery Failed Admin Limits on Monthly Surveillance; May 11, 2012
- IR 1365431; Multiple MCR False Annunciator Indications During A1R16; May 11, 2012
- IR 1365473; NRC Violations with 3 Cross-Cutting Aspects Within 12 Months; May 8, 2012
- IR 1365476; NRC SIT Inspection - Green NCV - SVAG Valve Fuse Blowing; October 12, 2010
- IR 1365555; MCR Distraction - Locked in Alarm with No Reflash Capability; May 11, 2012
- IR 1365582; Leaks Identified During AF VT-2 Examination (WO 1454281-49); May 11, 2012
- IR 1365585; Leaks Identified During AF VT-2 Examination (WO 1454282-54); May 11, 2012
- IR 1365618; CAPR Assignment 54 Under IR 1101858 Improperly Created; May 12, 2012
- IR 1365641; NRC SIT - Green Finding - Condensate Reject to Turbine Floor; November 12, 2010
- IR 1365663; 1RD07J: Power Supply PS2 Fuse FU3-5A Loose in Cabinet; May 12, 2012
- IR 1365664; 1MS001A Failed Air Check Valve Leakage Test; May 12, 2012
- IR 1372288; Adjust Mechanical Stops on 1CV8524B; May 30, 2012
- IR 1372291; Adjust Mechanical Stops on 1CV8522B; May 30, 2012
- IR 1372307; NRC Question on 1A MSIV; May 30, 2012
- IR 1372309; Adjust Mechanical Stops on 1CV8516; May 30, 2012
- BwAR 1-7-D3; RCP Seal Outlet Temp High; Revision 10
- BwAR 2-7-D3; RCP Seal Outlet Temp High; Revision 9
- 1BwEP-3; Steam Generator Tube Rupture; Revision 207 WOG 2
- 1BwOSR 3.7.2.1; Main Steam Isolation Valve Full Stroke Surveillance; Revision 13
- 1BwOSR 5.5.8.MS-4; Main Steam System Isolation 1MS101A/B/C/D Valve Indication 18 Month Surveillance; Revision 2

- LS-AA-104-1004; 50.59 Evaluation No. BRW-E-2012-120; TRM Change Request No. 12-007; Eliminating Action 3.3.y.D from TRM 3.3.y; Revision 00
- LS-AA-2150; Monthly Data Elements for RETS/ODCM Radiological Effluent Occurrences; Revision 5
- Monthly Data Elements for NRC RETS/ODCM Radiological Effluent Occurrences from January 2011 through April 2012
- NEI 96-07; Guidelines for 10 CFR 50.59 Implementation; Revision 1 - November 2000
- Event Timeline - January 30, 2012 - Byron Unit 2 Reactor Trip
- Licensee Position Paper; MSIV TS and TRM Entry; Revision 1
- LER (McGuire Nuclear Station Unit 1) 05000369/2005-002-00; MSIV Inoperable Due to Internal Binding; April 10, 2004
- Drawing 20E-1-4030MS06; Schematic Diagram Loop 1A & 1B MSIV Bypass Valves 1MS101A & B; March 31, 1978
- Drawing AN-1; Annunciator System; May 24, 2006, Revision 5

4OA3 Followup of Events & Notices of Enforcement Discretion

- Operation Logs

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
AOP	Abnormal Operating Procedure
AOR	Analysis of Record
ASME	American Society of Mechanical Engineers
BA	Boric Acid
BAE	Boric Acid Evaluation
BMV	Bare Metal Visual
CAP	Corrective Action Program
CC	Code Case
CLB	Current Licensing Basis
CFR	Code of Federal Regulations
DC	Direct Current
CIV	Containment Isolation Valve
CVCS	Chemical Volume Control System
EPRI	Electric Power Research Institute
ESFAS	Engineered Safety Feature Actuation System
ET	Eddy Current Testing
GDC	General Design Criteria
GL	Generic Letter
HELB	High Energy Line Break
IEMA	Illinois Emergency Management Agency
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
I/O	Input/Output
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
ISI	Inservice Inspection
ITS	Improved Technical Specifications
kV	Kilovolt
LAR	License Amendment Request
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
mph	Miles Per Hour
MSIP	Mechanical Stress Improvement Program
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NDE	Non-destructive Examination
NEI	Nuclear Energy Institute
NOAA	National Oceanic Atmospheric Administration
NRC	U.S. Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation
ODCM	Offsite Dose Calculation Manual
OSP	Outage Safety Plan
PARS	Publicly Available Records System

PI	Performance Indicator
psi	Pounds Per Square Inch
psid	Pounds Per Square Inch Differential
PT	Liquid Dye Penetrant
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RFO	Refueling Outage
SCBA	Self-Contained Breathing Apparatus
SDE	Shallow Dose Equivalent
SDP	Significance Determination Process
SG	Steam Generator
SSC	Systems, Structures, and Components
TLD	Thermoluminescent Dosimeter
TRM	Technical Requirements Manual
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Examination
WO	Work Order

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Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000456/2012003; 05000457/2012003
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Letter to M. Pacilio from E. Duncan dated August 9, 2012.

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000456/2012003; 05000457/2012003

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