



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

August 4, 2015

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2, NRC INTEGRATED
INSPECTION REPORT 05000456/2015002; 05000457/2015002

Dear Mr. Hanson:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Braidwood Station, Units 1 and 2. On July 16, 2015, the NRC inspectors discussed the results of this inspection with Mr. M. Kanavos, and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

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

Based on the results of this inspection, two NRC-identified and one self-revealed finding of very low safety significance (Green) were identified. The findings were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your Corrective Action Program, the NRC is treating these violations as Non-Cited Violations, in accordance with Section 2.3.2 of the NRC's Enforcement Policy.

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

B. Hanson

-2-

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," 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's Public Document Room or from the Publicly Available Records (PARS) component of the 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; 50-457
License Nos. NPF-72; NPF-77

Enclosure:
IR 05000456/2015002; 05000457/2015002
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: 05000456/2015002; 05000457/2015002

Licensee: Exelon Generation Company, LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, IL

Dates: April 1 through June 30, 2015

Inspectors: J. Benjamin, Senior Resident Inspector
D. Betancourt, Resident Inspector
J. Mancuso, Acting Resident Inspector
T. Go, Health Physicist
M. Holmberg, Reactor Inspector
N. McMurray, Observer, Office of New Reactors
B. Metrow, Inspector, Illinois Emergency Management Agency

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

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	2
REPORT DETAILS	5
Summary of Plant Status.....	5
1. REACTOR SAFETY.....	5
1R01 Adverse Weather Protection (71111.01)	5
1R04 Equipment Alignment (71111.04).....	7
1R05 Fire Protection (71111.05).....	8
1R06 Flooding (71111.06)	9
1R08 Inservice Inspection Activities (71111.08P).....	9
1R11 Licensed Operator Requalification Program (71111.11)	18
1R12 Maintenance Effectiveness (71111.12).....	19
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13).....	22
1R15 Operability Determinations and Functional Assessments (71111.15).....	23
1R18 Plant Modifications (71111.18).....	24
1R19 Post-Maintenance Testing (71111.19)	25
1R20 Outage Activities (71111.20)	26
1R22 Surveillance Testing (71111.22).....	27
1EP6 Drill Evaluation (71114.06).....	28
2. RADIATION SAFETY	28
2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01).....	28
2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)	34
2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08).....	34
4. OTHER ACTIVITIES	39
4OA1 Performance Indicator Verification (71151).....	39
4OA2 Identification and Resolution of Problems (71152).....	41
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153).....	42
4OA5 Other Activities	43
4OA6 Management Meetings.....	43
SUPPLEMENTAL INFORMATION	1
KEY POINTS OF CONTACT.....	1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	2
LIST OF DOCUMENTS REVIEWED.....	3
LIST OF ACRONYMS USED	13

SUMMARY OF FINDINGS

Inspection Report 05000456/20015002; 05000457/2015002, 04/01/2015 – 06/30/2015, Braidwood Station, Units 1 & 2; Inservice Inspection Activities; Maintenance Effectiveness.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three U.S. Nuclear Regulatory Commission (NRC)-identified findings of very low safety significance (Green) were identified. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

Cornerstone: Initiating Events

Severity Level IV. The inspectors identified a Severity Level IV NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.71(e), "Periodic Update of the Updated Final Safety Analysis Report (UFSAR)," and an associated Green finding for the licensee's failure to update the UFSAR with a description of the Thimble Tube Inspection Program to reflect information submitted to the NRC in response to NRC Bulletin 88-09. Specifically, the licensee did not update Section 5.2.4, "Inservice Inspection and Testing of Reactor Coolant Pressure Boundary," of the UFSAR to include the Incore Thimble Tube Inspection Program, which provided the basis for leakage integrity for this portion of the reactor coolant pressure boundary. The licensee entered this issue into their Corrective Action Program (CAP) and identified a recommended action to incorporate the Incore Thimble Tube Inspection Program into the UFSAR.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to update the UFSAR with the Thimble Tube Inspection Program could result in reductions or elimination of the program without seeking prior NRC approval and insufficient thimble tube inspections could also result in the failure to detect thimble tube wear prior to an un-isolable leak in the reactor coolant pressure boundary. Additionally, the failure to update the UFSAR was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and adversely affected the Cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding screened as having very low safety significance (Green), because the licensee's failure to update the UFSAR with a description of the Thimble Tube Inspection Program had not resulted in degradation of a thimble tube such that the reactor coolant system leak rate for a small break loss of coolant accident was exceeded and did not affect systems used to mitigate a loss of coolant accident. Therefore, the inspectors answered "No" to Questions A.1 and A.2, of Exhibit 1, "Initiating Events Screening Questions," identified in Appendix A of IMC 0609 and the finding screened as having very low safety significance. Violations of

10 CFR 50.71(e) are dispositioned using the traditional enforcement process, because they are considered to be violations that potentially impede or impact the regulatory process. In accordance with Sections 6.1.c.7 and 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the UFSAR as required by 10 CFR 50.71(e) had not yet resulted in an unacceptable change to the facility (e.g. thimble tube structural integrity was maintained) or procedures and the associated finding was of very low risk significance. The finding was the result of an error made in excess of 10 years ago, and thus was not indicative of current licensee performance. Therefore, no cross-cutting aspect was identified. (Section 1R08.1.b)

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the licensee's failure to follow a procedure for completing an American Society of Mechanical Engineers (ASME) Section XI Code pressure test. Specifically, the licensee failed to implement the required corrective actions or evaluations for evidence of leakage (boric acid deposits) identified on a containment spray (CS) system valve bolted connection prior to returning this component to service. The licensee entered this issue into their CAP and initiated actions to clarify procedures to ensure the ASME Code Section XI, Paragraph IWB-3522, requirements were implemented, and components with Code relevant conditions were corrected or evaluated prior to returning them to service.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to adhere to procedure ER AA-330-001 was based upon the licensee's decision to return a component exhibiting evidence of boric acid leakage to service without Code corrective measures or evaluation. Additionally, this type of error could result in inservice failure of equipment. Therefore, this finding affected the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the Cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). The finding screened as having very low safety significance (Green), because the licensee's failure to adhere to procedure ER AA-330-001 and remove valve 1CS011B from service with a Code relevant condition did not result in operation of the plant with an inoperable system or component. Therefore, the inspectors answered "Yes" to Question A.1 of Exhibit 2, "Mitigating Systems Screening Questions," identified in Appendix A of IMC 0609, and the finding screened as having very low safety significance. The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Conservative Bias because the licensee staff did not use a decision-making practice that emphasized prudent choices over those that were simply allowable. Specifically, the failure to remove valve 1CS011B from service with a relevant condition was based upon the licensee's decision that this was an allowable option because the ASME Code Section XI paragraph was not clear. [H14] (Section 1R08.5.b)

Green. A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on April 28, 2015, when licensee personnel failed to establish adequate

procedural controls related to how much oil could be added or removed from the control room chillers without affecting its functionality. Specifically, the 0A control room ventilation (VC) chiller was declared inoperable due to high oil content in the refrigerant, which caused reduced cooling efficiency to the point of non-functionality. The licensee entered this issue in their CAP, restored the 0A VC chiller to operable status on May 1, 2015, and performed an evaluation to establish the acceptable level of oil migration to retain functionality of the VC chiller.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, because, it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences (i.e. core damage). The finding screened as having very low safety significance (Green), because it did not result in the loss of safety function, and did not result in an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that the associated finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because the licensee staff did not implement effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, following three documented issues with VC chiller performance, Engineering determined that the issues were related to high oil content in the chiller refrigerant. Based on this information, corrective actions related to optimizing refrigerant/oil levels in the chiller were recommended to the Plant Health Committee, which were approved for immediate implementation. However, the actions were not appropriately incorporated into the work control process or the CAP, which led to them not being implemented in a timely manner. (P.3) (Section 1R12.2)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period shut down for a planned refueling outage (RFO). The unit was restarted on April 17, 2015, and reached full power on April 21, 2015. The unit operated at or near full power for the entire inspection period with one exception. On May 10, 2015, Unit 1 was down powered to 72 percent at the request of the grid operator due to system load constraints.

Unit 2 operated at or near full power for the entire inspection period with one exception. On April 20, 2015, Unit 2 was down powered to approximately 84 percent at the request of the grid operator due to forecast system load constraints.

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 the systems selected for inspection and verified that operator actions were appropriate as specified by plant-specific procedures. Documents reviewed are listed in the Attachment. 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. The inspectors' reviews focused specifically on the following plant systems:

- essential service water; and
- main power transformers.

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

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for May 8, 2015, the inspectors reviewed the licensee's overall preparations and protection for the expected weather conditions. The inspectors observed the licensee's preparations and planning for the significant storm potential. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. The inspectors conducted a site walkdown including walkdowns of various plant structures and systems to check for maintenance or other apparent deficiencies that could adversely affect system operations during the predicted significant weather. In addition, the inspectors inspected the licensee's emergency alternating current power systems, because their safety-related functions could be affected or required as a result of high winds-generated missiles, or the loss of offsite power. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become a missile hazard during a tornado. The inspectors' evaluated 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. Documents reviewed 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

No findings were identified.

.3 Readiness For Impending Adverse Weather Condition—Coal City Tornado

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for June 22, 2015, the inspectors reviewed the licensee's overall preparations and protection for the expected weather conditions. On June 23, 2015, following the occurrence of high winds in the protected area and a tornado touchdown in the vicinity of the plant (Coal City), the inspectors walked down bullet resistant enclosures, the independent spent fuel storage facility, and other areas in addition to the licensee's emergency alternating current power systems to assess any potential adverse impact on the site. The inspectors compared the licensee staff's preparations with site procedures and determined whether the staff's actions were adequate. The inspectors' evaluated operator staffing and accessibility of controls and indications for those

systems required to control the plant. 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. Documents reviewed 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

No findings were identified.

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:

- A and B spent fuel pool cooling trains while the Unit 1 reactor was defueled during the RFO;
- 1B auxiliary feedwater system while the 1A auxiliary feedwater system was inoperable for surveillance testing;
- 1B emergency diesel generator (DG) while the 1A DG was out-of-service for maintenance;
- 0B control room chilled water system while the 0A control room chilled water system was out-of-service for maintenance; and
- Unit 2 component cooling water system while the Unit 1 component cooling water heat exchanger was out-of-service for maintenance and testing activities.

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

These activities constituted five partial system walkdown sample as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (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:

- U1 main steam and auxiliary feedwater pipe tunnel;
- fuel handling building;
- 1A/1B DG rooms;
- spent fuel pool heat exchanger and pump rooms;
- auxiliary building 364' elevation general area; and
- lower cable spreading room 426' elevation.

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

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

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. Specific documents reviewed are listed in the Attachment. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- A and B essential service water rooms and associated equipment hatches.

This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08P)

From March 31, 2015, through April 10, 2015, 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 systems, risk-significant piping and components, and containment systems.

The inspections described in Sections 1R08.1, 1R08.2, R08.3, IR08.4, and 1R08.5 below constituted one ISI sample as defined in IP 71111.08-05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors observed and reviewed records of the following Non-Destructive Examinations (NDEs) mandated by the American Society of Mechanical Engineers (ASME) Code Section XI 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 a NRC-approved alternative requirement:

- ultrasonic examination (UT) of penetration nozzles, and J-groove welds on the reactor vessel head;
- UT of a pipe-to-elbow weld (1FW-03-10) in the feedwater system;
- UT of safety nozzle-to-shell welds and inner radius (1PZR-01-N4B and 1PZR-01-N4C) on the pressurizer vessel;

- magnetic particle examination of nozzle-to-shell welds (1SG-05-SGN-03 and 1SG-05-SGN-04) on the A steam generator; and
- dye penetrant (PT) examination of penetration nozzle 69 J-groove weld overlay repair of the reactor vessel head.

In response to NRC Bulletin 88-09, "Thimble Tube Thinning in Westinghouse Reactors," the licensee committed to implement an inspection program to periodically confirm incore neutron monitoring system thimble tube integrity. The inspectors observed the following NDE conducted as part of the licensee's program established to manage thinning/wear of the incore neutron monitoring system thimble tubes caused by flow-induced vibration to determine if the inspection conducted was consistent with the licensee's response to NRC Bulletin 88-09:

- eddy current testing (ET) data acquisition and analysis for two incore neutron monitoring thimble tube locations.

For the surface and volumetric NDE performed since the previous RFO, the licensee had not identified any relevant indications. Therefore, no NRC review was completed for this inspection procedure attribute.

The inspectors reviewed records for the following pressure boundary weld repairs completed for risk-significant systems during the current Unit 1, and prior Unit 2 RFO to determine whether the licensee applied the pre-service NDE and acceptance criteria required by the construction Code and/or an NRC-approved Code relief request. Additionally, the inspectors reviewed the welding procedure specifications and supporting weld procedure qualification records to determine whether the weld procedures were qualified in accordance with the requirements of the Construction Code and the ASME Code, Section IX:

- Unit 1 - weld 1 and weld 4, pipe-to-pipe and pipe-to-tee (1CV08BA-4")
- Unit 2 - weld 1, cap-to-valve body (2RC8042B); and
- Unit 2 - welds 1 through 4, modify support (2AB23B044K).

b. Findings

Failure to Update the UFSAR – Thimble Tube Inspection Program

Introduction: The inspectors identified a Severity Level IV NCV of 10 CFR 50.71(e), "Periodic Update of the UFSAR," and an associated finding of very low safety significance (Green) for the licensee's failure to update the UFSAR with a description of the Thimble Tube Inspection Program to reflect information submitted to the NRC in response to NRC Bulletin 88-09. Specifically, the licensee did not update Section 5.2.4, "ISI and Testing of Reactor Coolant Pressure Boundary (RCPB)," of the UFSAR to include the Incore Thimble Tube Inspection Program, which provided the basis for leakage integrity for this portion of the RCPB.

Description: During the 1980's, a number of foreign and domestic pressurized water reactors (PWRs) designed by the Westinghouse Electric Company (WE) experienced leakage from the incore neutron monitoring system thimble tubes caused by wear at the internal core support structures. The NRC issued two Information Notices (INs) on this subject; IN 84-55, "Seal Table Leaks at PWRs," and IN 87-44, "Thimble Tube Thinning in

WE Reactors". In July of 1988, the NRC issued Bulletin 88-09, to determine if licensees were in compliance with General Design Criteria (GDC) 14, "RCPB," with respect to the incore neutron monitoring system thimble tubes that formed part of the RCPB. Specifically, the NRC requested that licensees establish a periodic inspection program to monitor for wear on incore thimble tubes and report the results of the first thimble tube inspection. In Bulletin 88-09, the NRC determined that a thimble tube inspection program was needed to ensure that licensees were in compliance with GDC 14 of 10 CFR Part 50, Appendix A, and to minimize (through early detection of thimble tube thinning) the likelihood of a potentially non-isolable leak from the RCPB.

By letters dated January 8, 1990, and August 2, 1990, the licensee responded to NRC Bulletin 88-09 for the Braidwood units, and reported the results of the Initial Thimble Tube Inspections. In these letters, the licensee committed to performing inspections every RFO until sufficient data was accumulated to generate a baseline and correlation for thimble tube thinning. Specifically, the licensee implemented ET of the thimble tubes based upon guidance provided in a vendor document WCAP 12866, "Bottom Mounted Instrumentation Flux Thimble Tube Wear - A Westinghouse Owner's Group Final Report." The NRC reviewed and accepted the licensee's response to Bulletin 88-09 by NRC letter dated February 26, 1991. However, the licensee did not update the UFSAR with a description of the Incore Thimble Tube Inspection Program to reflect the information submitted to the NRC in the 1990 letters.

Regulatory Guide 1.181, "Content of the Updated UFSAR in Accordance with 10 CFR 50.71(e)," endorsed the guidance provided in Revision 1 of Nuclear Energy Institute (NEI) 98-03, "Guidelines for Updating UFSAR," as an acceptable process to comply with 10 CFR 50.71(e). As stated in Section 6.1.3, "Analysis of New Safety Issues," of NEI 98-03, a UFSAR Section was required to be updated if the description was not accurate, or not bounding, or both. In the Braidwood UFSAR, Section 5.2.4, "ISI and Testing of RCPB," the ASME Code Section XI Inspection Program was identified as the inspection program for the RCPB. However, this description was not accurate and not bounding because the ASME Section XI Program did not include inspection of the incore thimble tube portion of the RCPB. Therefore, the inspectors concluded that Section 5.2.4 of the UFSAR should have been updated to include a description of the Incore Thimble Tube Inspection Program.

Because the Thimble Tube Inspection Program was not described in the UFSAR, the licensee implemented changes to this program without conducting a review in accordance with 10 CFR 50.59 to determine if prior NRC approval was required. During the Spring 2012 RFO for Unit 1, the licensee reduced the thimble tube examination scope such that only 16 of the 58 flux thimble tubes were examined, and in the September 2013 RFO the licensee failed to obtain examination data for any of the 58 Unit 1 incore thimble tubes. The changes in the Thimble Tube Inspection Program scope or frequency may have been consistent with the licensee's response to Bulletin 88-09, if sufficient data had been acquired to generate a baseline, and correlation for thimble tube thinning to support reduction in the inspection frequency from each RFO, but the licensee was unable to provide this information at the conclusion of the inspection period. To ensure that the reductions in program scope had not challenged the integrity of the Unit 1 thimble tubes, the inspectors reviewed the results of the Spring 2015 RFO ET data collected from all 58 thimble tube locations as documented in the licensee's vendor report "Master-Lee - Exelon Nuclear Braidwood Unit 1 Incore Thimble Tubes ET Final Report." Based upon this review, 21 tubes

contained wear indications and one tube contained wear indications greater than the limit established for continued service. Although this tube exceeded the limit for continued service, it remained within the vendor established limit for structural integrity (reference WCAP 12866). Therefore, the inspectors concluded that the prior changes in the Thimble Tube Inspection Program scope had not resulted in plant operation with an unacceptable thimble tube condition for Unit 1.

The licensee entered this issue into their CAP as IR 2483208 and identified a recommended action to incorporate the Incore Thimble Tube Inspection Program into the UFSAR.

Analysis: The inspectors determined that the failure to update the UFSAR with a description of the Thimble Tube Inspection Program to reflect information submitted to the NRC in response to NRC Bulletin 88-09 was contrary to 10 CFR 50.71(e) and was a performance deficiency.

The performance deficiency was determined to be more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to update the UFSAR with the Thimble Tube Inspection Program could result in reductions or elimination of the program without seeking prior NRC approval and insufficient thimble tube inspections could also result in failure to detect thimble tube wear prior to an un-isolable leak in the RCPB. Additionally, the failure to update the UFSAR was more than minor because it was associated with the Initiating Event Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions.

The inspectors completed a Phase 1 significance determination of this issue using IMC 0609, "Significance Determination Process (SDP)," Attachment 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," dated June 19, 2012. The licensee's failure to update the UFSAR with a description of the Thimble Tube Inspection Program had not resulted in degradation of a thimble tube such that the RCS leak rate for a small break loss of coolant accident was exceeded and did not affect systems used to mitigate a loss-of-coolant accident. Therefore, the inspectors answered "No" to Questions A.1 and A.2 of Exhibit 1, "Initiating Events Screening Questions," identified in Appendix A of IMC 0609, and the finding screened as having very low safety significance (Green).

Violations of 10 CFR 50.71(e) are dispositioned using the traditional enforcement process, because they are considered to be violations that potentially impede or impact the regulatory process. In accordance with Sections 6.1.c.7 and 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the UFSAR as required by 10 CFR 50.71(e) had not yet resulted in an unacceptable change to the facility (e.g. thimble tube structural integrity was maintained) or procedures, and the associated finding was of very low risk significance.

This violation was also associated with a finding that has been evaluated by the SDP, and communicated with a SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider regulatory

process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation, and the safety significance of the associated finding.

Because the finding was the result of an error made in excess of ten years ago, and therefore was not indicative of current licensee performance, no cross-cutting aspect was identified.

Enforcement: Title 10 CFR 50.71(e) requires, in part, that licensees shall periodically update the UFSAR, originally submitted as part of the application for the operating license, to assure that the information included in the report contains the latest information developed. This submittal shall include the effects of all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to a Commission requirement since the submittal of the original UFSAR, or as appropriate, the last update to the UFSAR under this section.

Contrary to the above, in 1990, the licensee failed to update the UFSAR to reflect information submitted to the Commission by letters dated January 8, 1990, and August 2, 1990, to confirm compliance with commission regulations identified in Appendix A of 10 CFR Part 50 (e.g. GDC-14 "RCPB"). Specifically, the licensee failed to update the UFSAR with a description of the Thimble Tube Inspection Program necessary to maintain the integrity of the RCPB. In accordance with the Enforcement Policy, Sections 6.1.c.7 and 6.1.d.3, the violation was classified as a Severity Level IV violation. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's CAP as IR 2483208, this violation is being treated as a Severity Level IV NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000456/2015002-01; NCV 05000457/2015002-01, Failure to Update the UFSAR – Thimble Tube Inspection Program**).

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the Unit 1 reactor vessel head a bare metal visual examination and a non-visual examination were required to be performed during this RFO pursuant to 10 CFR 50.55a(g)(6)(ii)(D).

The inspectors observed the bare metal visual examination conducted on the Unit 1 reactor vessel head on three 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 the 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 their CAP and implemented appropriate corrective actions.

The inspectors observed and reviewed data for non-visual examinations conducted on the reactor vessel head penetrations 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 reactor vessel head penetration nozzle No. 69 and the associated repair weld overlay indications accepted for continued service, whether the licensee's evaluation and acceptance criteria were consistent with the ASME Section III Code, 10 CFR 50.55a(g)(6)(ii)(D), and/or the NRC-approved alternative (Relief Request 13R-09).

The inspectors also observed grinding to reduce the size of a rejectable PT indication identified in head penetration No. 69 J-groove weld overlay completed during the Unit 1 2015 RFO to determine if the licensee applied the acceptance criteria required by the construction Code and NRC approved Relief Request 13R-09.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

During the Unit 1 March 2015 RFO, 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 can cause degradation of safety-significant components and to determine if components with BA leaks were properly identified in the CAP.

The inspectors reviewed the following licensee evaluations of RCS and connected system components with BA leaks and/or deposits to determine if the licensee properly applied corrosion rates and assessed the effects of corrosion on structural or pressure boundary integrity.

- Boric Acid Evaluation (BAE) for IR 1565318 - 1RC8037B Dry Boron at Nuts;
- BAE for IR 1565323, 1RC8037C - Dry Boron at Nuts; and
- BAE for IR 1565325, 1RC8037A - Dry Boron at Nuts.

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, "Corrective Actions":

- IR 1599672; U1 Fuel Pool Cooling Pump Leak;
- IR 1639774; 1B containment spray (CS) Eductor Bolted Connection Leak; and
- IR 1598224; CS Eductor Outlet Leak.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

No steam generator (SG) examinations were required for the 2015 Unit 1 RFO pursuant to TS requirements in Section 3.4.19, "SG Tube Integrity," and Section 5.5.9, "SG Program." Because the licensee did not conduct SG tube examinations, 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 whether:

- the licensee had established an appropriate threshold for identifying ISI-related problems;
- the licensee had performed a root cause analysis (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 requirements. Specific documents reviewed by the inspectors are listed in the Attachment.

b. Findings

Mechanic Joint Leakage Accepted for Continued Service Without Code Corrective Actions

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," for the licensee's failure to adhere to the procedure for completing an ASME Section XI Code pressure test. Specifically, the licensee failed to implement the required corrective actions or evaluations for evidence of leakage (BA deposits) identified on a CS system valve bolted connection prior to returning the component to service.

Description: ASME Code Section XI, Article 9000 defines a relevant condition as, “a condition observed during a visual examination that requires supplemental examination, corrective measure, correction by repair/replacement activities, or analytical evaluation.” Relevant conditions typically include thru-wall leakage, leakage at bolted connections, and corrosion of pressure boundary components. In accordance with ASME Section XI, Paragraph IWB-3522, relevant conditions identified during the conduct of an ASME Section XI system pressure test requires corrective actions to meet the requirements of Paragraphs IWB-3142 and IWA-5250 prior to continued service.

On December 17, 2013, during an ASME Code Section XI pressure test on the CS system, the licensee identified white and brown colored BA deposits at the valve 1CS011B flange joint below the bolting and documented this condition in IR 1598224. The affected flange studs were chromium-molybdenum steel (ASME SA-193 Grade B7) and the nuts were carbon steel (ASME SA-194, Grade 2H), and both types of material were susceptible to corrosion induced by BA leakage. In IR 1598224, the licensee identified that the brown colored BA deposits observed were indicative of corrosion. The licensee subsequently evaluated the BA corrosion effects on the studs and nuts at this flange joint on January 13, 2014, in EC 396827 and determined that the corrosion rates would be sufficiently low to defer ASME Code corrective measures to inspect the affected bolts until April of 2014. On January 28, 2014, the licensee completed an inspection and replacement of the affected bolts and no degradation was identified on the affected valve flange studs and nuts. However, valve 1CS011B had not been removed from service during the 27-day period required to complete a BA corrosion evaluation, and the 42-day period required before the ASME Code Section XI, Paragraph IWA-5250 corrective measures were completed to remove and inspect the affected bolting. The inspectors identified that continued service without completing Code corrective actions for this relevant condition was not in accordance with Step 4.10.1 of ER AA-330-001, “Section XI Pressure Testing,” which implemented Code Paragraph IWB-3522 and required corrective measure be completed prior to returning the affected component to service.

The inspectors reviewed applicable procedure guidance and interviewed licensee staff members to determine why valve 1CS011B was allowed to remain in service with a Code relevant condition. The licensee’s procedure ER-AA-335-015-2003, “VT-2 Visual Examination in Accordance with ASME 2001 Edition, 2003 Addenda,” defined several types of leakage as Code relevant conditions including leakage from bolted or threaded mechanical joints. Specifically, Step 4.9.1 of this procedure defined leakage as, “the presence of fluid (active flow, wetness or residual) that may penetrate the pressure retaining boundary or mechanical connection,” and this definition was consistent with guidance provided in Section XI Code interpretations XI-1-04-07 and XI-1-92-64. Despite this procedural guidance, the CS system check valve CS011B was not removed from service. because the licensee staff incorrectly determined that leakage at a bolted connection was not the type of relevant condition that required removal of the affected item from service. Specifically, the licensee had adopted an inappropriate and narrow interpretation for the definition of leakage from non-insulated components in Paragraph IWB-3522.1(a) of the 2001 Edition 03 Addenda of Section XI to mean that through-wall pressure boundary leakage was the only type of relevant condition that required corrective measures prior to returning a component to service. To reach this conclusion, the licensee staff presumed that Code Paragraph IWB-3522.1, Step “a” contained an error, because it did not include footnote 9 which referenced through-wall leakage, and footnote 9 had been added to Steps “c” and “e” of this paragraph. The

licensee staff adopted this Code position without seeking an interpretation from the ASME Section XI Code Committee to clarify the intent of Step “a” in this Code paragraph. To determine the intent of the 2001 Edition with 2003 Addenda of Section XI, Paragraph IWB-3522, the inspectors and members of NRR staff reviewed later Editions of the Section XI Code that contained additional guidance to clarify the intent of this paragraph. Beginning with the 2007 Edition 2008 Addenda of Section XI, guidance was added to Paragraph IWB-3522 that leakage from mechanical connections (e.g. bolted joints) in excess of owner established criteria, as a condition requiring corrective measures or evaluation prior to returning the affected component to service. Therefore, the NRC staff concluded that the Paragraph IWB-3522 requirements from the 2001 Edition 2003 Addenda of Section XI applied to mechanical connections as well as through-wall leakage and the CS system valve CS011B should not have been returned to service until Code corrective measures were satisfied. Because the licensee staff had incorrectly interpreted the Section XI Code rules during prior system pressure tests, it was possible that other examples of Code components with relevant conditions were not removed from service pending completion of Code corrective measures. The inspectors did not have a safety concern for the potential extent of condition, because the licensee’s corrective action process required an operability evaluation for affected components to remain inservice pending the completion of the Code corrective measures.

The licensee entered this issue into their CAP as IR 2482840 and initiated actions to clarify procedures to ensure the ASME Code Section XI, Paragraph IWB-3522 requirements were implemented and components with Code relevant conditions were corrected or evaluated prior to returning a component to service.

Analysis: The inspectors determined that the failure to adhere to procedure ER AA-330-00, and remove CS system valve 1CS011B from service with a Code relevant condition identified during a Section XI pressure test was contrary to 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” and was a performance deficiency.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, because, if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the failure to adhere to procedure ER AA-330-001 was based upon the licensee’s decision to return a component exhibiting evidence of BA leakage to service without Code corrective measures or evaluation, and this type of error could result in the inservice failure of equipment. Therefore, this finding affected the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the Cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent adverse conditions (i.e. core damage).

The inspectors evaluated this issue in accordance with the Phase 1 SDP identified in IMC 0609, “SDP,” Attachment 0609.04, “Initial Characterization of Findings,” and IMC 0609, Appendix A, “The SDP for Findings At-Power,” dated June 19, 2012. The licensee’s failure to adhere to procedure ER AA-330-001 and remove valve 1CS011B from service with a Code relevant condition had not resulted in operation of the plant with an inoperable system and/or component. Therefore, the inspectors answered “Yes” to Question A.1 of Exhibit 2, “Mitigating Systems Screening Questions,” identified in

Appendix A of IMC 0609, and the finding screened as having very low safety significance (Green).

The inspectors identified a cross-cutting aspect associated with this finding in the area of Human Performance, Conservative Bias, because the licensee staff did not use a decision-making practice that emphasized prudent choices over those that were simply allowable. Specifically, the failure to remove valve 1CS011B from service with a relevant condition was based upon the licensee's decision that this was an allowable option because the ASME Code Section XI paragraph was not clear. (Item H.14 of IMC 310).

Enforcement: Title 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, and drawings.

Step 4.10.1.1 of Procedure ER-AA-330-001 (Revision12) stated relevant indications described in IWB-3522 shall require corrective actions in accordance with IWB-3142 and IWA-5250 prior to continued service.

Contrary to the above, on December 17, 2013, a relevant condition (BA deposit indicative of leakage at the valve 1CS011B flanged joint) was identified during an ASME Section XI pressure test and corrective actions were not completed in accordance with IWA-5250 prior to continued service. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's CAP as IR 2482840, this violation is being treated as a Severity Level IV NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000456/2015002-02, Mechanic Joint Leakage Accepted for Continued Service Without Code Corrective Actions)**

1R11 Licensed Operator Regualification Program (71111.11)

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

a. Inspection Scope

On July 25, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11-05

b. Findings

No findings were identified.

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

a. Inspection Scope

On June 8, 2015, the inspectors observed the control room operator's response following an unexpected Unit 2 rod movement failure alarm during surveillance testing. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

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

Performance in these areas was compared to pre-established operator action expectations, procedural compliance and 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.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- 0B control room ventilation (VC) system chiller.

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

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components 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

Control Room Chiller Inoperability Due to High Oil Content in the Refrigerant

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on April 28, 2015, when licensee personnel failed to establish procedural controls related to how much oil could be added or removed from the VC chillers without affecting its functionality. Specifically, the 0A VC chiller was declared inoperable due to high oil content in the refrigerant, which caused reduced cooling efficiency to the point of non-functionality.

Description: The VC temperature control system consists of two redundant and independent trains. Each train consists of heating coils, a chiller, a chiller water pump, cooling coils, instrumentation, and controls to provide for control room temperature control. The system is designed to maintain a control room temperature of less than or equal to 90 degrees Fahrenheit (F) for 30 days following a design basis accident.

On April 28, 2015, while performing a pressure test of the main control room, the 0A VC chiller exhibited an elevated chilled water inlet temperature of about 68 degrees, which caused an alarm to be received in the control room. The setpoint for the control room alarm was 65 degrees. Based on this indication, the chiller was declared inoperable and the ventilation system was transferred to the B train. The licensee entered Limited Condition for Operation 3.7.11, "Control Room Ventilation Temperature Control System," Condition A, which requires the affected VC temperature control system to be restored to an operable status within 30 days.

During subsequent troubleshooting the licensee determined that the oil content in the refrigerant was greater than 20 percent, which accounted for about 70 gallons. The normal range for oil content was less than 10 percent, which was less than about 30 gallons of oil. The excessive oil in the refrigerant caused a reduction in the heat transfer efficiency within the evaporator, which ultimately led to an increase in the chilled water temperature. In order to restore the chiller, a partial refrigerant/oil recharge was performed and the licensee removed approximately 1625 pounds of the refrigerant/oil mixture. Following the addition of new refrigerant, a chiller capacity verification test was performed and the chiller was returned to service on May 1, 2015.

The licensee performed an Apparent Cause Evaluation to further review this event. The investigation reviewed the equipment history, which revealed that the station had not been accurately documenting or tracking oil additions or removals. Furthermore, there was no engineering or administrative guidance established that provided a limit to how much oil could be added to the VC chillers before it began impacting the chiller's ability to function. Additionally, since the previous refrigerant removal window performed during November 2013, the licensee had experienced a few events that indicated that high oil content in the refrigerant was causing a degraded condition in the 0A VC chiller. Finally, most recently, due to events on February 12, 2014; March 8, 2014; and January 22, 2015, Engineering had determined that high oil content was likely the cause of the repeat issues. Based on this information, corrective actions were recommended to the Plant Health Committee to optimize refrigerant levels in the VC chillers. These actions were approved for implementation on March 9, 2013. However, at the time of the 0A VC failure in April 28, 2015, the actions had not been incorporated into the work control process or the CAP program, which prevented timely implementation.

Based on the information discussed above, the licensee investigation concluded that the VC chiller failure was due to high oil content in the refrigerant, which caused reduced cooling efficiency to the point of non-functionality. The contributing cause was determined to be "inadequate process requirements for logging quantities of oil added/removed from the VC chillers, trending/control of the total oil content within the machines, and ineffective corrective actions following identified issues." The inspectors reviewed the results of the investigation and identified no further concerns.

The licensee entered this issue into their CAP as IR 249283; restored the 0A VC chiller to operable status on May 1, 2015; and performed an evaluation to establish the acceptable level of oil migration to retain functionality of the VC chiller.

Analysis: The inspectors determined that the failure to establish procedural controls on how much oil could be added or removed from the control room chillers without affecting its ability to function was contrary to 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency.

The performance deficiency was determined to be more than minor in accordance with IMC 0612 because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, WO 01555813-01, "Adjust Oil Level/Refrigerant Level at '0A' Control Room Chiller," failed to provide adequate controls such that excessive amounts of oil were added to the 0A chiller and caused it to become inoperable on April 28, 2015.

The inspectors evaluated this issue in accordance with the Phase 1 SDP identified in IMC 0609, "SDP," Attachment 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," dated June 19, 2012. Since the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as having very low safety significance (Green) because it did not result in the loss of safety function and did not result in an actual loss of function of at least a single train for greater than its TS allowed outage time. Specifically, the licensee did not lose the safety function since the 0B VC chiller was operable and the 0A was restored within the TS allowed outage time.

The inspectors determined that the associated finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because the licensee staff did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, following three documented issues with VC chiller performance, Engineering determined that the issues were related to high oil content on the chiller. Based on this information, corrective actions related to optimizing refrigerant/oil levels in the chiller were recommended to the Plant Health Committee, which were approved for implementation. However, the actions were not appropriately incorporated into the work control process or the CAP, which led to them not being implemented in a timely manner. (P.3)

Enforcement: Title 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. The licensee established WO 01555813-01 and WO 01607039 as the implementing procedures for adding oil/refrigerant to the VC chillers; an activity affecting quality.

Contrary to the above, as of April 28, 2015, the licensee failed to have an instruction or procedure to specify the acceptable amount of oil content in the refrigerant of the VC chillers. Specifically, the implementing WOs gave instructions on how to add oil, and did not provide instructions on a limit on the amount of oil added.

Because this violation was of very low safety significance and was entered into the licensee CAP as IR 2492383, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000456/2015002-03; 05000457/2015002-03, Control Room Chiller Inoperability Due to High Oil Content in the Refrigerant)**

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 appropriate risk assessments were performed prior to removing equipment for work:

- Planned Yellow Risk, Unit 1 shutdown risk management during the week of April 6, 2015;
- Planned Yellow Risk, 1A auxiliary feedwater system out-of-service for maintenance during the week of April 24, 2015;
- Planned Yellow Risk, 1A DG out-of-service for maintenance during the week of May 4, 2015;
- Planned Yellow Risk, "A" train auxiliary building ventilation system out-of-service for maintenance during the week of May 12, 2015;
- Unplanned Orange Risk; 1A DG out-of-service for maintenance during a thunderstorm warning on May 8, 2015; and
- Unplanned Yellow Risk; tornado warning and high winds on June 22, 2015.

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. Documents reviewed during this inspection are listed in the Attachment.

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

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- U1 polar crane single failure proof crane equivalence – overspeed circuit degraded – EC 375682, Revision 007;
- LP-B 60 nondestructive examinations indications – IR 2480301;
- Operability Evaluation 15-004, steam generator weld tube to tube-sheet joint change AREVA – IR 02494354;
- Operability Evaluation 15-003, Unit 1 safety injection cold safety injection gas voids – IR 2485172;
- 2B DG KVAR [kilovolts amperes reactive] oscillations during monthly surveillance run – IR 2506291;

- failed open auxiliary feedwater control valves – IR 2511501; and
- Part 21 Struthers-Dunn relays – IR 2514810.

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 seven samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- auxiliary feedwater FLEX [Diverse and Flexible Mitigation Capability] connection - EC 394152.

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

This inspection constituted one plant modification sample as defined in IP 71111.18–05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- 2CC9520B component cooling water check valve PMT following preventative maintenance activities;
- 1SI8811 "A" enclosure pressure test PMT following corrective maintenance;
- 0A control room chiller compressor PMTs following corrective maintenance; and
- 1A DG PMTs following two year preventative maintenance activities.

These activities were selected based upon the structures, systems, and components ability to impact risk. The inspectors evaluated these activities for the following (as applicable): whether the effect of testing on the plant had been adequately addressed; whether testing was adequate for the maintenance performed; whether acceptance criteria were clear and demonstrated operational readiness; whether test instrumentation was appropriate; whether tests were performed as written in accordance with properly reviewed and approved procedures; whether equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and whether 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 four 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 RFO, conducted March 31 through April 18, 2015, 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 TSs 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 TSs;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of 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.

Documents reviewed are listed in the Attachment.

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:

- 1A emergency core cooling system full flow test (Routine);
- 2A emergency DG monthly run (Routine);
- 1A emergency DG monthly run (Routine); and
- 1B essential service water pump ASME (IST).

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

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

- were all problems identified during the testing appropriately documented and dispositioned in the licensee's CAP;
- where applicable, were annunciators and other alarms demonstrated to be functional and were annunciator and alarm setpoints consistent with design documents; and
- where applicable, were alarm response procedure entry points and actions consistent with the plant design and licensing documents.

Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on July 25, 2015, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff to evaluate the critique and to determine whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-06.

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 Inspection Planning (02.01)

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

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

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

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

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

- lower containment activities;
- upper containment activities;
- fuel handling building activities;
- auxiliary building activities; and
- radioactive waste facility activities.

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 (This evaluation may

- include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and
 - severe radiation field dose gradients that can result in non-uniform exposures of the body.

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

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

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

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

- Radiation Work Permit (RWP)-10016701; A1R18 Seal Table Room Activities;
- RWP-10016702; A1R18 Vent and Drains;
- RWP-10016671; A1R18 Shielding Installation Activities;
- RWP-10016682; A1R18 Containment Valve Work with Added Controls;
- RWP-10016683; A1R18 Reactor Head Disassembly and Reassembly; and
- RWP-10016691; A1R18 Containment Outage Radiation Protection Activities.

For these radiation work permits, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each radiation work permit were clearly identified. The inspectors evaluated whether electronic personal dosimeter alarm set-points were in conformance with survey indications and plant policy.

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed

whether the issue was included in the CAP, and dose evaluations were conducted as appropriate.

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

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors 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 type(s) 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 indicates 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.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

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

The inspectors evaluated the adequacy of radiological controls, such as required surveys, 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 an NRC-approved method of determining effective dose equivalent.

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

- RWP-10016701; A1R18 Seal Table Room Activities;
- RWP-10016702; A1R18 Vent and Drains;
- RWP-10016671; A1R18 Shielding Installation Activities;
- RWP-10016682; A1R18 Containment Valve Work with Added Controls;
- RWP-10016683; A1R18 Reactor Head Disassembly and Reassembly; and
- RWP-10016691; A1R18 Containment Outage Radiation Protection Activities.

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 tanks, cubicles, and reactor cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors discussed with the 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 have 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 require 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 areas.

b. Findings

No findings were identified.

.7 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.

.8 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.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold, and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve 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-Reasonably-Achievable Planning and Controls (71124.02)

The inspection activities supplement those documented in 050004562014003; 05000457/2014003, and constitute a partial sample as defined in IP 71124.02–05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the site-specific trends in collective exposures, and source term measurements.

b. Findings

No findings were identified.

.2 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 as low as reasonably achievable 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 as low as reasonably achievable planning process.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

This inspection constituted one complete sample as defined in IP 71124.08–05.

.3 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the UFSAR, the Process Control Program, and the recent Radiological Effluent Release Report for information on the types, amounts, and processing of radioactive waste disposed.

The inspectors reviewed the scope of quality assurance audits in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

b. Findings

No findings were identified.

.4 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements."

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for Protection Against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal, and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage."

The inspectors evaluated whether the licensee established a process for monitoring the impact of long term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

b. Findings

No findings were identified.

.5 Radioactive Waste System Walkdown (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in the UFSAR, Offsite Dose Calculation Manual (ODCM), and the Process Control Program.

The inspectors reviewed administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to assess whether the equipment which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety-significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the UFSAR were reviewed and documented in accordance with 10 CFR 50.59, as appropriate, and to assess the impact on radiation doses to members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers and assessed whether the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the Process Control Program, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors evaluated whether the tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's Process Control Program correctly described the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

b. Findings

No findings were identified.

.6 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors selected the following radioactive waste streams for review:

- RWS15-015; 4A-25 CP Resin to Energy Solutions; UN2912, Radioactive Material, Low-Specific Activity (LSA-I), 7;
- RWS15-003; Primary Resin to Waste Control Specialists Disposal Facility; UN2916; Radioactive Material. Type B(U) Package, 7; Fissile Accepted; RQ; and
- RWS14-008; Dry Active Waste to Energy Solution; Bear Creek; UN3321, Radioactive Material, LSA-II, 7.

For the waste streams listed above, the inspectors assessed whether the licensee's radiochemical sample analysis results (i.e., "10 CFR Part 61" analysis) were sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors evaluated

whether the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis for the selected radioactive waste streams.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61 for the waste streams selected above.

The inspectors evaluated whether the licensee had established and maintained an adequate Quality Assurance Program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

b. Findings

No findings were identified.

.7 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable transport cask certificate of compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for cask loading and closure procedures were consistent with the vendor's current approved procedures.

The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. The inspectors assessed whether the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to:

- As appropriate, the licensee's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979; and
- Title 49 CFR 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training."

The inspectors assessed whether the licensee's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

b. Findings

No findings were identified.

.8 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- RWS15-011; Seavan Containing Dry Active Waste and Metal; UN2912; Radioactive material, LSA-I, 7;
- RWS15-015; 4A-25 CP Resin to Energy Solutions; UN2912 , Radioactive Material, LSA-I, 7;
- RWS15-003; Primary Resin to Waste Control Specialists Disposal Facility; UN2916; Radioactive Material. Type B(U) Package, 7; Fissile Accepted; RQ; and
- RWS14-008; Dry Active Waste to Energy Solution; Bear Creek; UN3321, Radioactive Material, LSA-II, 7.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

b. Findings

No findings were identified.

.9 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the licensee CAP. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

The inspectors reviewed results of selected audits performed since the last inspection of this program and evaluated the adequacy of the licensee's corrective actions for issues identified during those audits.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams Per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams Per 7000 Critical Hours PI (1E01) for Braidwood Unit 1 and Unit 2 for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, IRs, event reports, and NRC Integrated Inspection Reports for the period of April 1, 2014, through March 31, 2015, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment.

This inspection constituted two unplanned scrams per 7000 critical hours samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI (1E04) for Braidwood Unit 1 and Unit 2 for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, IRs, event reports and NRC Integrated Inspection Reports for the period of April 1, 2014 through March 31, 2015, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment.

This inspection constituted two unplanned scrams with complications samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Exposure Control Effectiveness (OR01) PI for the period from the first quarter 2014 through the fourth quarter 2014. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if 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.

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

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specification (RETS)/ODCM (PR01) radiological effluent occurrences PI for the period from the first quarter 2014 through the first quarter 2015. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's IR 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 RETS/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 they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included whether identification of the problem was complete and accurate; whether timeliness was commensurate with the safety significance; whether 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 whether the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of January 1, 2015, through June 30, 2015, although some examples expanded beyond those dates where the scope of the trend warranted.

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

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report (LER) 05000456/2015001-00: Main Steam Isolation Valve (MSIV) Technical Specifications Applicability - MSIV Operability Position Change

On January 13, 2015, as part of a review of applicable operating experience, Braidwood station revised a previous position regarding MSIV operability if one of the two associated MSIV hydraulic accumulators was not functional to an individual MSIV. The previous station position was that only a single MSIV accumulator was necessary to support MSIV operability in most cases. The station revised this position after reviewing and discussing operating experience with Byron such that both MSIV hydraulic accumulator trains were necessary to support individual MSIV operability. The inspectors reviewed available documentation related to the event, and the associated corrective actions. This LER is closed.

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

4OA5 Other Activities

- .1 (Closed) Unresolved Item (URI) 05000456/2014003-03; 05000457/2014003-03, Corrective Actions to Address NCV 05000456/2012005-01; 05000457/2012005-01, "Failure to Maintain Watertight Door Safety Function After Routine Passage"

On July 25, 2014, the inspectors identified a concern with the licensee's corrective actions to address NCV 05000456/2012005; 05000457/2012005. Specifically, the NCV was associated with the licensee providing guidance that permitted operators to leave the diesel oil storage tank (DOST) room watertight flood doors open and unattended for up to 15 minutes to perform tours, inspections, walkdowns, sampling, or other routine tasks in the DOST rooms. The licensee addressed this NCV by making a change to their licensing basis, which eliminated the consideration of a circulating water system line break as an initiating event. This allowed the DOST doors to be left open and unattended for 15 minutes. The inspectors concern was related to the licensee's 10 CFR 50.59 not properly evaluating the adverse effect of keeping the doors open for an extended period of time.

During this inspection period the inspectors' reviewed the licensee's corrective actions and associated 10 CFR 50.59 evaluation that implemented this change. This URI is closed.

4OA6 Management Meetings

- .1 Exit Meeting Summary

On July 16, 2015, the inspectors presented the inspection results with Mr. M. Kanavos, Site Vice President, and other members of the licensee staff. The inspectors confirmed that proprietary material received during the inspection period that was no longer under review was returned to the licensee and none of the potential input discussed was considered proprietary.

- .2 Interim Exit Meetings

Interim exits were conducted for:

- The inspection results for the areas of radiological hazard assessment and exposure controls; occupational as-low-as-reasonably-achievable planning and controls; and occupational exposure control effectiveness PI verification with Mr. M. Kanavos, Site Vice President, and other members of the licensee staff on April 3, 2015.
- The inspection results in the area of inservice inspection with Mr. M. Kanavos, Site Vice President, and other members of the licensee staff on April 10, 2015.
- The inspection results in the areas of radioactive solid waste processing and radioactive material handling, storage, and transportation, and RETS/ODCM radiological effluent occurrences PI verification with Mr. M. Kanavos, Site Vice President, and other members of the licensee staff on June 12, 2015.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Kanavos, Site Vice President
M. Marchionda, Plant Manager
J. Bashor, Engineering Manager
P. Boyle, Maintenance Manager
J. Cady, Radiation Protection Manager
B. Casey, Exelon ISI
A. Ferko, Operations Manager
B. Finlay, Site Security Manager
H. Miller, As-Low-As-Reasonably-Achievable Analyst
R. Radulovich, Nuclear Oversight Manager
P. Raush, Regulatory Assurance Manager
R. Symonson, Radiation Protection Technical Manager
K. Weibel, Health Physicist

NRC

E. Duncan, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000456/2015002-01; 05000457/2015002-01	SLIV, NCV	Failure to Update the Final Safety Analysis Report-Thimble Tube Inspection Program (Section 1R08.1b)
05000456/2015002-02	NCV	Mechanic Joint Leakage Accepted for Continued Service Without Code Corrective Actions (Section 1R08.5b)
05000456/2015002-03; 05000457/2015002-03	NCV	Control Room Chiller Inoperability Due to High Oil Content in the Refrigerant (Section 1R12.1b)

Closed

05000456/2015-001-00; 05000457/2015-001-00	LER	Main Steam Isolation Valve (MSIV) Technical Specifications applicability – MSIV Operability Position Change (Section 4OA3.1)
05000456/2014003-03; 05000457/2014003-03	URI	Corrective Actions to Address NCV 05000456/2012005-01; 05000457/2012005-01, Failure to Maintain Watertight Door Safety Function After Routine Passage (Section 4OA5.1)

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 2514313; Present Lake Status to PHC – Lake Root Cause; July 19, 2015
- IR 2513050; 0/1/2 BwOA ENV-1 Entry; June 10, 2015
- IR 2518042; Loss of 34FT and 203FT MET Tower Wind Speed Indication; June 22, 2015
- IR 2518068; 0/1/2 BwOA ENV-1 Entry; June 22, 2015
- IR 2518447; Storm Debris on Road to MET Tower; June 23, 2015
- EN-BR-402-0005; Extreme Heat Implementation Plan; Revision 8
- WC-AA-107; Seasonal Readiness; Revision 15

1R04 Equipment Alignment

- BwOP DG-1; Diesel Generator Alignment to Standby Condition; Revision 29
- BwOP DG-M2; Operating Mechanical Lineup 1B D/G; Revision 17
- BwOP FC-E1; Electrical Lineup Unit 1, Operating; Revision 1
- BwOP FC-E2; Electrical Lineup Unit 2, Operating; Revision 1
- BwOP FC-M1; Operating Mechanical Lineup Unit 1; Revision 9
- BwOP FC-M2; Operating Mechanical Lineup Unit 2; Revision 7
- BwOP CC-M2; Operating Mechanical Lineup Unit 2; Revision 16
- 2BwOSR 3.7.7.1; Component Cooling Water System Valve Lineup to Safety Related Equipment Surveillance; Revision 12

1R06 Flooding

CC-AA-201; Plant Barrier Impairment Permit No. 17421, Remove Bilco Hatch; Revision 10

1R05 Fire Protection

- IR 2506739; Door D501 (D852) Was Found Unsecure – GCA; May 28, 2015
- IR 2517156; Fireproofing Degradation; June 19, 2015
- Braidwood Pre-Fire Plan #111; AB 364' Aux. Bldg. General Area – (Center); FZ 11.3-0
- Braidwood Pre-Fire Plan #112; AB 364' Unit 1 Aux. Bldg. General Area – (North); FZ 11.3-0
- Braidwood Pre-Fire Plan #113; AB 364' Unit 1 Aux. Bldg. General Area – (South); FZ 11.3-0
- Braidwood Pre-Fire Plan #178; FH 401' Fuel Handling Building; FZ 12.1-0
- Braidwood Pre-Fire Plan #179; FH 416' Fuel Handling Building; FZ 12.1-0

1R08 Inservice Inspection Activities

- IR 2483208; NRC Bulletin 88-09 Not Incorporated into the FSAR; April 10, 2015
- IR 2482840; NRC NCV- Section XI Pressure Test Indication Resolution; April 9, 2015
- IR 2482423; Procedure Enhancements for ER-AA-335-003; April 8, 2015
- IR 2479135; Pipe Clamp - 1RY09081S Rotated Out of Tolerance; April 3, 2015
- IR 2478779; Procedure Clarification Needed for ISI Examination Procedure; April 1, 2015
- IR 1639774; 1B Containment Spray Eductor Bolted Con Leak; March 27, 2014.

- IR 1599672; U1 Fuel Pool Cooling Pump Leak; January 19, 2014
- IR 1598224; Containment Spray Eductor Outlet Leak; December 17, 2013
- IR 1577925; Welds Performed Incorrectly-1SXFS01-2; October 29, 2013
- IR 1565325; 1RC8037A – Dry Boron at Nuts; September 29, 2013
- IR 1565323; 1RC8037C - Dry Boron at Nuts; September 29, 2013
- IR 1565318; 1RC8037B Dry Boron at Nuts; September 29, 2013
- IR 1562009; FME 1C FW Pump Suction Strainer; September 14, 2013
- IR 1562004; FME 1A FW Pump Suction Strainer; September 14, 2013
- IR 1558967; Containment Liner Metal Reduction; September 15, 2013
- ASME Weld Data Record; Weld 1, Valve 2RC8042B; May 16, 2014.
- ASME Weld Data Record; Welds 1-4, Support 2AB23B044K; May 8, 2014
- Certification Record; Bare Metal Visual Examiner 520300 Summary; March 28, 2015
- Drawing No. 405B20; Bottom Mounted Instrumentation Flux Thimble Tube E.C.T. Calibration Standard; Revision 3
- Drawing No. 2-4403; ZETEC ASME/Wear Scar STD; Revision 0
- Drawing No. 1B00889; CoreStar International Corp Eddy Current Standard Tapered Wear Scar Standard As Built; Revision 0
- Drawing No. 1B00891; CoreStar International Corp Eddy Current Standard OD Flat Standard (As Built); Revision 0
- Drawing No. 2-4025; ZETEC Reference Standard; Revision 0
- ETSS-BWD-1(2) RC01R; Revision 7
- Liquid Penetrant Examination (A1R18-PT-005); 1RC01R Penetration 69; April 3, 2015
- Liquid Penetrant Examination (A2R17-322); Weld 1 Valve 2RC8042B; May 16, 2014
- Magnetic Particle (MT) Examination (A1R18-MT-001); Weld 1SG-05-SGN-04; April 8, 2015
- MT Examination (A1R18-MT-002); Weld 1SG-05-SGN-03; April 8, 2015
- Master-Lee - Exelon Nuclear Braidwood Unit 1 Incore Thimble Tubes Eddy Current Examination Final Report; March 2015
- PDQS; WDI-STD-1040; March 4, 2010
- PDQS; WDI-STD-1041; March 2, 2010
- Procedure ER-AA-335-002; Liquid Penetrant Examination; Revision 8
- Procedure ER-AA-330-007; Visual Examination of Section XI Class MC Surfaces and Class CC Liners; Revision 9
- Procedure GQP-9.7; PCI- Solvent Removable Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding; Revision 14
- Procedure EXE-ISI-11; Liquid Penetrant Examination; Revision 2
- Procedure EXE-PDI-UT-1; Ultrasonic Examination of Ferritic Piping Welds in Accordance with PDI-UT-1; Revision 6
- Procedure EXE-PDI-UT-2; Ultrasonic Examination of Austenitic Piping Welds in Accordance with PDI-UT-2; Revision 7
- Procedure EXE-UT-210; Manual Ultrasonic Examination of Vessel Welds Greater than 2"; Revision 4
- Procedure ER-AP-331-1002; Boric Acid Corrosion Control Program Identification, Screening and Evaluation; Revision 8
- Procedure ER-AP-331; Boric Acid Control (BACC) Program; Revision 7
- Procedure ER-AP-331-1001; BACC Inspection Locations, Implementation and Inspection Guidelines; Revision 7
- Procedure BwVS 210-3; Multifrequency Eddy Current Examination of Neutron Monitoring System (Incore Flux Thimble Tubes); Revision 3
- Procedure ML-NDE-017; Eddy Current Examination of Non-Ferromagnetic Heat Exchanger Tubing; Revision 2

- Procedure ML-NDE-005; Eddy Current Acquisition for Flux Thimble Tubing; Revision 4
- PQR 1-51A; December 28, 1983
- PQR 4-51A; September 12, 1986
- PQR A-003; February 8, 2000
- PQR A-004; February 8, 2000
- PQR TE1.1-C-6"; August 29, 2000
- Radiographic Examination and Interpretation Report; Weld 1 and Weld 4 - Valve 1CV08BA-4"; April 9, 2015
- Report 5.2.6-BRW-13-0159-S; Documentation of Liner Plate Inspection Criteria and Inspection Results for Outage A1R17; September 27, 2013
- Report 5.2.6-BRW-11-0312-S; Containment Liner Inspection/Acceptance Criteria; September 16, 2013
- Report 5.2.6-BRW-09-0041-S; Evaluation of Unit 1 Containment Liner Plate Due to Identified Gouges; April 15, 2009
- Report No. 2015-085; MT Yoke Functional Lift Serial Number 16360; March 30, 2015
- Ultrasonic Examination (A1R18-UT-002); 1PZR-01-N4B –NIR; April 1, 2015
- Ultrasonic Examination (A1R18-UT-003); 1PZR-01-N4C –NIR; April 1, 2015
- Ultrasonic Examination (A1R18-UT-006); 1PZR-01-N4B; April 1, 2015
- Ultrasonic Examination (A1R18-UT-005); 1PZR-01-N4C; April 1, 2015
- Ultrasonic Examination (A1R18-UT-008); 1FW-03-10; April 3, 2015
- WCAP 12866; Bottom Mounted Instrumentation Flux Thimble Wear- A Westinghouse Owner's Group Final Report; January 1991.
- WDI-ET-004; Introspect Eddy Current Analysis Guidelines; Revision 18
- WDI-STD-1040; Procedure for Ultrasonic Examination of Reactor Head Penetrations; Revision 12
- WDI-STD-1041; Reactor Vessel Head Penetration Ultrasonic Examination Analysis; Revision 10
- WDI-STD-1042; Procedure for Eddy Current Examination of Reactor Vessel Head Penetrations; Revision 5
- WDI-STD-1140; Procedure for IntraSpect Eddy Current Examination of Reactor Vessel Head Vent Line Penetrations Using Array Probes; Revision 1
- WDI-ET-004; IntraSpect Eddy Current Analysis Guidelines; Revision 18
- WPS 1-1-GTSM-PWHT; Revision 2
- WPS 8-8-GTSM; Revision 3
- WO 01662830; Modify Support 2AB23B044K; May 8, 2014
- WO 01736885; Valve 2RC8042B, Install Cap per EC 398090; May 16, 2014
- WO 01540506 01; Multifreq ECT of Incore Thimbles; September 10, 2013
- WO 01409694 01; Multifreq ECT Exam of Incore Detector Flux Thimble; April 19, 2012
- WO 01296012 01; Multifreq ECT Exam of Incore Detector Flux Thimble; October 7, 2010

1R11 Licensed Operator Requalification Program

- IR 2511530; Alarm 2-10-D6, Rod Control Non-Urgent Failure, SER #2164; June 8, 2015

1R12 Maintenance Effectiveness

- IR 1607074; 0A VC Chiller Oil Level is 15 Percent; January 11, 2014
- IR 1608429; Low Oil Level 0WO01CA; January 15, 2014
- IR 1621733; 0A VC Chiller Oil Level is Low; February 15, 2014
- IR 1625652; 0A VC Chiller (0WO01CA) Oil Level Low; February 25, 2014
- IR 1653228; VC Maintenance Rule (A)(1) Determination; April 29, 2014

- IR 1665270; 0B VC Chiller Oil Level at 90 Percent; May 29, 2014
- IR 2387042; 0A VC Chiller Oil Level Trending Lower Towards Empty; September 27, 2014
- IR 2401375; 0A VC Chiller Low Oil Level – 0WO01CA; October 25, 2014
- IR 2420401; 0A VC Chiller Tripped on Low Evap Refrigerant Temp – 0WO01CA; December 3, 2014
- IR 2441111; Guide Vanes Slow to Respond on 0A VC Chiller Start; January 22, 2015
- IR 2492383; 0A MCR Chiller Trouble alarm – 0WO01CA; April 28, 2015
- IR 2511530; Alarm 2-10-D6, Rod Control Non-Urgent Failure, SER #2164; June 8, 2015
- EN-AA-202-F-01; Exelon Refrigerant Service Order Form 0WO01CA; Revision 1
- WO 01555813-01; Adjust Oil Level/Refrigerant Level 0A Control Room Chiller

1R13 Maintenance Risk Assessments and Emergent Work Control

- A1R18 Protected Equipment Summary; Updated at 0000 on April 9, 2015
- A1R18 Protected Equipment Summary; Updated at 0300 on April 10, 2015
- EC 401162; Alternate Detail for Valve Lever Arm Enhancement for DG Overspeed Shutdown Butterfly Valve Lever; Revision 0
- 1B FW Pump OOS – April 2015; April 20, 2015
- 1C HD Pump Work Window – April 2015; April 17, 2015
- Drawing KSV-96-8; Air Intake & Exhaust

1R15 Operability Determinations and Functionality Assessments

- Design Analysis NAI-1419-002; Evaluation of Gas Accumulation in Byron Unit 1 ECCS Discharge Piping; EC 390600 (BR)
- EC 375682; Polar Crane Single Failure Proof Crane Equivalence – Overspeed Circuit NEI 08-05 Single Point Vulnerability; Revision 007
- EC 401855; Op Eval 15-003, Evaluation of Gas Voids Identified in the High Head Safety Injection Piping 1SI08FA-3”; April 15, 2015
- IR 0334118; 2A DG VARS Output Drifting During Monthly Surveillance Run; May 11, 2005
- IR 0342015; 2A DG VAR Changes During Monthly Surveillance; June 8, 2005
- IR 1177379; 2B DC VARS Drifted During Surveillance Run; February 19, 2011
- IR 1212870; 2B DG VARS Swings During Loading After Sync To Grid; May 6, 2011
- IR 2478341; U1 Polar Crane Overspeed – 1 HC01G; April 1, 2015
- IR 2483730; 1CV8113 Had Defective Parts; April 9, 2015
- IR 2485172; OSP-X Gas Void Identified at CV Cold Leg – 1SI08FA; April 15, 2015
- IR 2494354; RSGS Lacking ASME Section III NB-3000 Analyses; May 1, 2015
- IR 2495299; Fire Damper 0VV201Y is Closed; May 4, 2015
- IR 2506291; 2B DG – KVAR Oscillations During Monthly Surveillance; May 27, 2015
- IR 2500781; Gas Void in Line 2SI06BB; May 14, 2015
- IR 2500787; Gas Void in Line 2SI06BA; May 14, 2015
- IR 2501390; Gas Void in Line 1SI06BA; May 15, 2015
- IR 2511501; Alarm 2-3-D7, AF Flow Cont Vlv Setting Low for 2AF005E-H; June 7, 2015
- WO 01127229; 2PL08J Replace DG Voltage Regulator (90AVR); October 27, 2011
- OP-AA-108-115; Operability Determination; Revision 16

1R18 Plant Modifications

- IR 2476833; Questions Concerning EC 394152 Connection to the AF Line; March 30, 2015
- EC 394152; AF Connections in Main Steam Valve Room U1, FLEX Mod 5; Revision 003

1R19 Post Maintenance Testing

- IR 2492383; 0A MCR Chiller Trouble Alarm; April, 28, 2015
- BwHP 4006-052; Limitorque MOV Limit Switch Maintenance; Revision 6
- BwHP 5004-056; Limitorque MOV Torque Switch Maintenance; Revision 7
- BwMP 3305-057; Disassembly/Reassembly of Anderson Greenwood Wafer Check Valves (Type CV1B); Revision 15
- BwMP 3305-102; Limitorque Operator Maintenance (Type SMB Stem Nut and Actuator Removal); Revision 3
- 1BwOSR 290-2-RH; Gaseous Leak Testing of the 1RH01SA/B Valve Containment Assemblies; Revision 3
- 1BwOSR 5.5.8.SI-7A; Safety Injection System Containment Sump 1SI8811A Valve Stroke Surveillance; Revision 6
- MA-MW-736-600; Torquing and Tightening of Bolted Connection Checklist; Revision 5
- WO 01676642 01 through 12 ; Repair 1SI8811A Body to Bonnet Leakage; April 2015
- WO 01746150 01; IST D&I 2CC9520B – MMD Perform Check Valve D&I; March 2015
- WR 494727; Troubleshoot 0A MCR Chiller Compressor Amps High

1R20 Refueling and Other Outage Activities

- IR 1618988; Failed Surveillance Due to 0VA052YA/B Damper Failure; February 10, 2014
- IR 1663572; PMT Failure on 2MS040C; May 23, 2014
- IR 1633647; Unexpected Blue and Red System 345KV Failure Alarms
- IR 1651835; 1A DG – Failure Analysis Results on Switching Valve; April 25, 2014
- IR 2472861; Opex Eval – Westinghouse NSAL-15-2, “Impact of a Break in the Reactor Coolant Pump; March 22, 2015
- IR 2474030; MRC Rejected ACE 2457576; March 25, 2015
- IR 2475436; 1A Train AF Full Flow Testing Deficiency; March 27, 2015
- IR 2475437; Seismic Monitor Not Available for Emergency Plan Assessment; March 27, 2015
- IR 2475487; 1B Train AF Full Flow Testing Deficiency; March 27, 2015
- IR 2475499; LFM Insulation Follow-Up by Byron IR 02474017; March 27, 2015
- IR 2479119; Fatigue Assessment; April 3, 2015
- IR 2476833; AF Flex, Passive Check Valve Potentially Becoming Active Which Would Invalidate GDC 57 Compliance – EC 394152; March 30, 2015
- IR 2476833; Questions Concerning EC 394152 Connection to the AF Line in Main Steam Valve Room; March 30, 2015
- IR 2477095; B&W SG Tube/Tubesheet Weld ASME Section III Code Question; March 31, 2015
- IR 2477734; OSP-A Fuel Handling Building Crane Lower Limit Failed to Stop Hook; March 31, 2015
- IR 2478341; U1 Polar Crane Overspeed – 1HC01G; April 1, 2015
- IR 2478377; Nipple Into 1MS013A Discovered Damaged During Disassembly; April 1, 2015
- IR 2478521; Good Catch 1B SI Pump Testing; April 2, 2015
- IR 2478921; OSP-A – Eddy Current Thimble Tube Analysis; April 2, 2015
- IR 2479122; Fatigue Assessment; April 3, 2015
- IR 2479123; Fatigue Assessment; April 3, 2015
- IR 2479588; Rejectable Indication of Penetration 69; April 3, 2015
- IR 2479761; A1R18 Level 1 PCE - 15-001; April 4, 2015
- IR 2479957; 1SI8811B Light Indication Intermittent During Valve Stroke; April 4, 2015
- IR 2479985; 131X Cubicle 2B (1AP20EC) Took 1 Minute to Open Following Pushing TRIP Button; April 5, 2015

- IR 2479919; Turbine Bearing #8 Out of Spec Requires Machining; April 4, 2015
- IR 2480301; LP-B General NDE Inspections Identified 60 Disc Deration with Indications; April 5, 2015
- IR 2480720; CT – First Aid for Siemens Worker; April 6, 2015
- IR 2480787; A1R18 First Aid – CBI Carpenter; April 6, 2015
- IR 2480894; 1PM04J & 1PM01J Annunciators Will Not Test Intermittently; April 7, 2015
- IR 2480894; 1BwOA ELEC-7 Entered, Annunciators Still Not Testable; April 7, 2015
- IR 2481384; Photographer and NOS Distracted RXS FLS During Duel Moves; April 3, 2015
- IR 2485059; A1R18LL – PZR Vacuum Delays; April 14, 2015
- 1BwOS XPC-W1; Containment Penetration Status Weekly Surveillance; Revision 23
- ECR 418464; Loading of Reactor Services and Maintenance Equipment on U1 Containment 426' Elevation During A1R18
- A1R18 Refueling Outage Turnover Meeting; March 31, 2015
- A1R18 Refueling Outage Turnover Meeting; April 6, 2015
- A1R18 Refueling Outage Turnover Meeting; April 7, 2015
- A1R18 Refueling Outage Turnover Meeting; April 8, 2015
- A1R18 Protected Equipment Summary; Updated at 1600 on April 1, 2015
- A1R18 Containment Closure Plan
- A1R18 Outage Schedule; A1R18 Critical Path; March 31, 2015
- ECR 418464; Loading of Reactor Services and Maintenance Equipment on U1 Containment 426' Elevation During A1R18
- Braidwood Containment Evacuation Plan A1R18
- OU-AP-104; Shutdown Safety Equipment Status Checklist; Revision 20
- RP-AA-460; High Radiation Area and Locked High Radiation Area Briefing Form (CM-2); March 29, 2015
- RWP# 10016680; A1R18 Shutdown/Startup Mode 3 Walkdowns; Revision 00
- NRC Event 50957; Technical Support Center Out of Service for Planned Maintenance; April 6, 2015
- Braidwood Station Critical Path, Low Float (<24), MEVs Sorted by Discipline, AS, ES, TG
- Generic Letter 88-17; Loss of Decay Heat Removal; October 17, 1988
- Safety System Functional Failures (PWR); 1Q/13 LER 2012-005-00; Incorrect Procedure Guidance Results in Inoperable 1A/1B DG
- Safety System Functional Failures (PWR); LER 2012-003-01; Fuel Handling Incident Area Radiation Monitors Inoperable
- Letter From Commonwealth Edison to NRR; Byron and Braidwood Units 1 and 2 Response to Generic Letter 88-17 Loss of Decay Heat Removal; December 30, 1988, January 11, 1989, September 15, 1989, and January 22, 1990
- Diagrams of Unit 1/2 Containment – RX Cavity

1R22 Surveillance Testing

- IR 2504735; 2A SX Pump ASME Data in “Alert” Range; May 22, 2015
- IR 2515023; 1MS101A Would Not Open When Demanded From Its Control Switch; June 16, 2015
- BwOPAF-7T1; Diesel Driven Auxiliary Feedwater Pump Operating Log; Revision 9
- 1BwOSR 3.7.5.4-2; Diesel Driven Auxiliary Feedwater Pump Surveillance; Revision 20
- 1BwOSR 5.5.8.SI-11; Comprehensive Inservice Testing Requirements for Unit 1 Safety Injection Pumps and Safety Injection System Check Valve Stroke Test; Revision 4
- HU-AA-1211-F-02; HLA Briefing Worksheet; Cavity Floodup and ECCS Full Flow Testing; Revision 0
- WO 01681669 01; IST-1SI8819A/B/C/D/1SI8926-SI Cold Leg Check Valve; April 5, 2015

- WO 01829766 01; Diesel Driven Auxiliary Feedwater Pump Monthly Surveillance; May 22, 2015

1EP6 Drill Evaluation

- EP-MW-114-100-F-01; Nuclear Accident Reporting System (NARS) Form – Unusual Event; June 25, 2015

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- IR 2484248; A1R18 Lower Level Reactor Cavity Airborne Issue Due to Delay Reactor Head Assembly; April 13, 2015
- IR 2483961; A1R18 Level 3 PCE Due to Particle on Scrub Left Wrist during Activity on the Upper Containment; April 12, 2015
- IR 2479612; NRC Observation from Radiation Protection Baseline Inspection for A1R18 Braidwood Outage; April 3, 2015
- IR 2479403; Individual Received ED Dose Rate Alarm at Unit 1 Curved Wall Area; April 3, 2015
- IR 247721; Elevated Dose Rates Identified at IC Thimble M-7; March 31, 2015
- RP-AA-280; Occupational Exposure Reporting; Revision 8
- RP-AA-203-1001; Personnel Exposure Investigation; Related to AR-02479403; ED Dose Rate Alarm at Unit 1 Curved Wall Area; April 3, 2015
- OU-AA-390; Spent Fuel Pool Material Control; Revision 2
- RP-AA-460; Controls for High and Locked High Radiation Areas; Revision 26
- RP-AA-461; Radiological Controls for Contaminated Water Diving Operations; Revision 5
- RP-AA-462; Controls for Radiographic Operations; Revision 9
- RWP-10016701; A1R18 Seal Table Room Activities
- RWP-10016702; A1R18 Vent and Drains
- RWP-10016671; A1R18 Shielding Installation Activities
- RWP-10016675; A1R18 Containment Outage Scaffold
- RWP-10016682; A1R18 Containment Valve Work with Added Controls
- RWP-10016683; A1R18 Reactor Head Disassembly and Reassembly
- RWP-10016691; A1R18 Containment Outage Radiation Protection Activities
- RWP-10016713; A1R18; CRDM Vent Line Volumetric Exam-PT Penetration 69 and All Associated Work
- RWP-10016950; A1R18; 1SI8811A Valve Disassembly/Inspect/Repair and Associated Work

2RS2 Occupational ALARA Planning and Controls (71124.02)

- IR 2457674; Planning for Unexpected Radiological Conditions; February 23, 2015
- ALARA -10016671; A1R18 Shielding Installation Activities
- ALARA -10016675; A1R18 Containment Outage Scaffold
- ALARA -10016682; A1R18 Containment Valve Work with Added Controls
- ALARA -10016683; A1R18 Reactor Head Disassembly and Reassembly
- ALARA -10016691; A1R18 Containment Outage Radiation Protection Activities
- ALARA -10016713; A1R18; CRDM Vent Line Volumetric Exam-PT Penetration 69 and all Associated Work
- ALARA -10016950; A1R18; 1SI8811A Valve Disassembly/Inspect/Repair and Associated Work
- RP-AA16; ALARA Program Description; Revision 0
- RP-AA-400; ALARA Program; Revision 11

- RP-AA-401; Operational ALARA Planning and Controls; Revision 18
- RP-AA-401; ALARA Work in Progress Review; A1R18 Shielding Installation Activities RWP-10016671; March 31, 2015
- RP-AA-401; ALARA Work in Progress Review; A1R18 Vent and Drains RWP-10016702; March 31, 2015
- RP-AA-401; ALARA Work in Progress Review; A1R18 Seal Table Room Activities RWP-10016701; March 31, 2015

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- IR 2484248; A1R18 Lower Level Reactor Cavity Airborne Issue due to Delay Reactor Head Assembly; April 13, 2015
- IR 2483961; A1R18 Level 3 PCE Due to Particle on Scrub Left Wrist during Activity on the Upper Containment; April 12, 2015
- IR 2479612; NRC Observation from Radiation Protection Baseline Inspection for A1R18 Braidwood Outage; April 3, 2015
- IR 2479403; Individual Received ED Dose Rate Alarm at Unit 1 Curved Wall Area; April 3, 2015
- IR 247721; Elevated Dose Rates Identified at IC Thimble M-7; March 31, 2015
- RP-AA-280; Occupational Exposure Reporting; Revision 8
- RP-AA-203-1001; Personnel Exposure Investigation; Related to AR-02479403; ED Dose Rate Alarm at Unit-1 Curved Wall Area; April 3, 2015
- OU-AA-390; Spent Fuel Pool Material Control; Revision 2
- RP-AA-460; Controls for High and Locked High Radiation Areas; Revision 26
- RP-AA-461; Radiological Controls for Contaminated Water Diving Operations; Revision 5
- RP-AA-462; Controls for Radiographic Operations; Revision 9
- RWP-10016701; A1R18 Seal Table Room Activities
- RWP-10016702; A1R18 Vent and Drains
- RWP-10016671; A1R18 Shielding Installation Activities
- RWP-10016675; A1R18 Containment Outage Scaffold
- RWP-10016682; A1R18 Containment Valve Work with Added Controls
- RWP-10016683; A1R18 Reactor Head Disassembly and Reassembly
- RWP-10016691; A1R18 Containment Outage Radiation Protection Activities
- RWP-10016713; A1R18; CRDM Vent Line Volumetric Exam-PT Penetration 69 and all Associated Work
- RWP-10016950; A1R18; 1SI8811A Valve Disassembly/Inspect/Repair and Associated Work

2RS2 Occupational ALARA Planning and Controls (71124.02)

- IR 2457674; Planning for Unexpected Radiological Conditions; February 23, 2015
- ALARA-10016671; A1R18 Shielding Installation Activities
- ALARA-10016675; A1R18 Containment Outage Scaffold
- ALARA-10016682; A1R18 Containment Valve Work with Added Controls
- ALARA-10016683; A1R18 Reactor Head Disassembly and Reassembly
- ALARA-10016691; A1R18 Containment Outage Radiation Protection Activities
- ALARA-10016713; A1R18; CRDM Vent Line Volumetric Exam-PT Penetration 69 and all Associated Work
- ALARA-10016950; A1R18; 1SI8811A Valve Disassembly/Inspect/Repair and Associated Work
- RP-AA16; ALARA Program Description; Revision 0
- RP-AA-400; ALARA Program; Revision 11
- RP-AA-401; Operational ALARA Planning and Controls; Revision 18

- RP-AA-401; ALARA Work in Progress Review; A1R18 Shielding Installation Activities
RWP-10016671; March 31, 2015
- RP-AA-401; ALARA Work in Progress Review; A1R18 Vent and Drains
RWP-10016702; March 31, 2015
- RP-AA-401; ALARA Work in Progress Review; A1R18 Seal Table Room Activities
RWP-10016701; March 31, 2015

40A1 Performance Indicator Verification (71151)

- LS-AA-117-1002; Licensing and Regulatory Affairs Correspondence Concurrence Form;
Revision 3
- LS-AA-2140; Monthly Data Elements for NRC Occupational Exposure Control Effectiveness;
Revision 5
- LS-2150; Monthly Data Elements for NRC RETS/ODCM Radiological Effluent Occurrences;
Revision 5
- RP-AA-203-1001; Samples Personnel Exposure Investigation; Attachment 1; Revision 7;
Samples Reviewed From January 2014 through December 2014
- Reviewed PI Data Elements from January 2014 through April 2015

40A2 Problem Identification and Resolution

- IR 2459044; 2B DG – Manual Trip on Incomplete Sequence Alarm; February 25, 2015
- IR 2468066; Thru Wall Leak on 1SX27DA Line Downstream of 1SX169A; March 13, 2015
- IR 2472505; Entered 2BWOA RCP-2 Loss of Seal Cooling for 2A/D RCPS; March 22, 2015
- IR 2477824; 1BWOA ELEC-7 Entered Due to Failure of Some Annunciators; April 1, 2015
- IR 2478271; OSP-A Pressurizer PORV 1A Accumulator Relief Valve Leaking By; April 1, 2015
- IR 2478502; Fukushima Hot Tap Support Too Tall for Supporting Hot Tap; April 1, 2015
- IR 2479006; OSP-X As-Found Condition WO #1697398-01 U1 AFW Tunnel ELP; April 2, 2015
- IR 2479368; Fire Door Found Propped Open with Water Bottle; April 3, 2015
- IR 2479901; All Girls Trucking Driver Declared Prohibited at Checkpoint; April 4, 2015
- IR 2480377; 1SI8811A Failed Pressurization Test; April 6, 2015
- IR 2480894; 1BWOA ELEC-7 Entered, Annunciators Still Not Testable; April 7, 2015
- IR 2481610; OSP-A 1A DG Lube Oil Pressure High – 1DG5032A; April 8, 2015
- IR 2482069; 1SI8888 Dual Indication During Restoration; April 8, 2015
- IR 2483736; UAT 141-1 PH Phase Differential Relay OOT; April 12, 2015
- IR 2483869; A1R18 LL – 1CV121 Delays, LL IR; April 12, 2015
- IR 2490052; NRC Identified Items in 1B AF Pump Room – 1AF01PB; April 23, 2015
- IR 2490092; Anomaly Observed in Braidwood Cooling Lake; April 23, 2015
- IR 2490560; Weapon Discharge During Dry Fire Training; April 24, 2015
- IR 2491827; Appendix R ELBP Failed PM – 0LL0-14; April 28, 2015
- IR 2498166; Shut Down UHS BERM Restoration Due to Unexpected Conditions; May 9, 2015
- IR 2501500; 2A DG – 8R Cylinder. Exhaust Temperature at Upper End of Expected Range;
May 15, 2015
- IR 2501820; Through Wall Leak Downstream 1SX007; May 17, 2015
- IR 2502089; Unexpected Alarm 2-18-C4 Drop 3 System Trouble; May 18, 2015
- IR 2502937; Steam Leak Identified on 1ES091; May 19, 2015
- IR 2503512; Entry Into 2BWOA ROD-3 For Misaligned Rod; May 20, 2015
- IR 2503899; NRC Concern For Flood Seal PBI 17793; May 21, 2015
- IR 2504606; Fire Seal Not Installed Per Detail BR-E-24; May 22, 2015
- IR 2504760; MCR 1B Seal Injection Flow Indicating 14-15 GPM; May 22, 2015
- IR 2504933; 2" of Standing Water Found in 0A/0B VA Supply Fan Room; May 23, 2015

- IR 2506652; Level 1 Personnel Contamination Event 15-006; May 28, 2015
- IR 2512440; PZR PORV Sup Press LO; June 9, 2015
- IR 2514005; 2 ERO Duty Team Members – Improper Call-In Drill Response; June 10, 2015
- IR 2514028; 2B DG HELB ITL Not Worked Due to PBI Issue; June 12, 2015
- IR 2515574; Active Leak on the 401 Elevation, Unit 2 Turbine Building; June 16, 2015
- IR 2515641; OPS Crew 3 & 5 Clock Reset; June 16, 2015
- IR 2516046; 4.0 Critique of Inadvertent Trip of U2 SAC (IR 2516041); June 17, 2015
- IR 2519208; 2A DOST Tank Valve 2DO001A Leakage Impacts 2B DG; June 14, 2015
- IR 2519458; Fire on Protected Area Power Pole; June 25, 2015
- CY-BR-120-4120; Braidwood Station Lake Chemistry Strategic Plan; Revision 6

4AO3 Follow-Up of Events and Notices of Enforcement Discretion

- LER 05000456/2015001–00: Main Steam Isolation Valve (MSIV) Technical Specifications Applicability - MSIV Operability Position Change

4OA5 Other Activities

- IR 2519458; Fire on Protected Area Power Pool
- OP-AA-102-105-1001; Exelon Nuclear Standard Plan of the Day; Revision 16

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
BA	Boric Acid
BACC	Boric Acid Control
BAE	Boric Acid Evaluation
BMV	Bare Metal Visual
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CS	Containment Spray
DG	Diesel Generator
DOST	Diesel Oil Storage Tank
ET	Eddy Current Testing
FLEX	Diverse and Flexible Mitigation Capabilities
GDC	General Design Criteria
IMC	Inspection Manual Chapter
IN	Information Notice
IP	Inspection Procedure
IR	Issue Report
ISI	Inservice Inspection
IST	Inservice Testing
KVAR	Kilovolt Amps Reactive
LER	Licensee Event Report
LSA	Low-Specific Activity
MSIV	Main Steam Isolation Valve
MT	Magnetic Particle
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OSP	Outage Safety Plan
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post Maintenance Test
PT	Dye Penetrant
PWR	Pressurized Water Reactor
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specification
RFO	Refueling Outage
RWP	Radiation Work Permit
SDP	Significance Determination Process
SG	Steam Generator
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Examination

VC Control Room Ventilation
WE Westinghouse Electric Company
WO Work Order

B. Hanson

-2-

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Sincerely,

/RA/

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

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

Enclosure:
IR 05000456/2015002; 05000457/2015002
w/Attachment: Supplemental Information

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