UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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LISLE, IL 60532-4352

February 2, 2016

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 05000456/2015004; 05000457/2015004

Dear Mr. Hanson:

On December 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Braidwood Station, Units 1 and 2. On January 11, 2016, the NRC inspectors discussed the results of this inspection with Ms. M. Marchionda, Site Vice President, and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

Based on the results of this inspection, two self-revealed findings 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 (NCVs), in accordance with Section 2.3.2 of the NRC's Enforcement Policy.

If you contest the subject or severity of the 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 copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Braidwood Station.

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/

John Jandovitz, Acting Chief
Branch 3
Division of Reactor Projects

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

Enclosure:
IR 05000456/2015004; 05000457/2015004

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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:	05000456/2015004; 05000457/2015004
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Station, Units 1 and 2
Location:	Braceville, IL
Dates:	October 1 through December 31, 2015
Inspectors:	J. Benjamin, Senior Resident Inspector D. Betancourt, Resident Inspector T. Bilik, Senior Reactor Inspector B. Boston, Reactor Inspector J. Bozga, Reactor Inspector G. Edwards, Health Physicist M. Garza, Emergency Preparedness Inspector T. Go, Health Physicist C. Hunt, Reactor Inspector D. McNeil, Senior Operations Engineer D. Reeser, Operations Engineer
Approved by:	J. Jandovitz, Acting Chief Branch 3 Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000456/2015004; 05000457/2015004; 10/01/2015 – 12/31/2015; Braidwood Station, Units 1 & 2; Outage Activities.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were self-revealed. The findings were considered Non-Cited Violations (NCVs) of U.S. Nuclear Regulatory Commission (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," dated February 2014.

Cornerstone: Initiating Events

- Green. A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1, "Procedures," was self-revealed on October 5, 2015, due to the licensee's failure to establish and maintain adequate guidance for operating the Unit 1 and Unit 2 motor driven main feedwater pump (MDFWP) during plant shutdown conditions. Specifically, on October 4, 2015, during a Unit 2 plant shutdown, the Unit 2 MDFWP was placed in service at low forward feedwater flow conditions and was manually tripped when the pump's main journal bearing temperature exceeded the procedural limit. Subsequent review, determined that the procedural limit was too low as previously recognized by historic station specific operating experience. This issue was entered into the licensee's corrective action program (CAP) as Issue Report (IR) 2565486.

  The inspectors determined that the performance deficiency was more than minor because the issue was associated with the Procedural Quality attribute of the Initiating Event cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the performance deficiency contributed to a loss of main feedwater event that upset plant stability and challenged the critical safety function of removing decay heat via the steam generators in Mode 3. For Unit 1, the increased potential for a loss of main feedwater event existed under similar conditions. The inspectors determined that the finding was of very low safety significance based upon a detailed risk evaluation. The inspectors concluded that this finding did not have a cross-cutting aspect because the performance deficiency was greater than 3 years old and, therefore, not indicative of recent performance. (Section 1R20.1b(2))

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1, "Procedures," was self-revealed on October 5, 2015, due to the licensee's failure to establish a written procedure for combating emergencies and other significant events, as required by Regulatory Guide 1.33, "Quality Assurance Program Requirements." Specifically, upon a loss of feedwater in Mode 3 (Hot Standby), which

is an expected design and licensing basis event, the licensee did not have a written procedure as established by the Regulatory Guide. This issue was entered into the licensee's CAP as IRs 2566239 and 2565513.

The inspectors determined the finding to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, it was associated with the Mitigating Systems cornerstone Procedural Quality attribute, and adversely impacted the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the absence of a procedure(s) complicated the operator response to the loss of feedwater event in Mode 3. The inspectors determined the finding to be of very low safety significance in accordance with IMC 0609, Appendix A, "The SDP for Findings at Power," dated September 7, 2012, Exhibit 2, since the inspectors answered "No" to the Mitigating Systems questions under Section A, "Mitigating Systems, Structures, and Components and Functionality." The inspectors did not identify a cross-cutting aspect associated with this finding, because it was confirmed not to be reflective of current performance due to the age of the performance deficiency. (Section 1R20.1b(3))

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power for the entire inspection period with one exception. On November 14, 2015, reactor power was lowered to approximately 82 percent to perform main turbine valve testing. The reactor was returned to full power the following day.

Unit 2 operated at or near full power for the entire inspection period with one exception. On October 5, 2015, the unit was shut down for a planned refueling outage. The unit was restarted on October 23, 2015, and reached full power on October 26, 2015.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. 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. Documents reviewed are listed in the Attachment. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- intake structure trash rake and screen wash systems; and
- refueling water storage tank.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (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:

- Unit 2 4kV electrical bus 242 while bus 241 was out-of-service for planned maintenance;
- spent fuel pool cooling systems following Unit 2 core offload and associated refueling activities; and
- Unit 2 motor driven and diesel driven auxiliary feed water (FW) systems following plant startup to Mode 3.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), 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 three partial system walkdown samples 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 availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Unit 2 auxiliary building electrical division 21 engineered safety feature switchgear room;

- Unit 2 auxiliary building electrical division 22 engineered safety feature switchgear room; and
- 1A emergency diesel generator and day tank rooms.

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, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event.

Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

These activities constituted three 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. The specific documents reviewed are listed in the Attachment. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- diesel oil storage tank rooms and sump check valves.

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

b. Findings

No findings were identified.

.2 Underground Vaults

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable and level alarm circuits, were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- groundwater intrusion in turbine building cable vault.

Specific documents reviewed during this inspection are listed in the Attachment. This inspection constituted one underground cable routing area sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08P)

From October 5 – 16, 2015, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the reactor coolant (RC) system, steam generator (SG) tubes, emergency FW 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.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

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

- Ultrasonic (UT) examination of auxiliary FW pipe-to-elbow welds 2AF-05-06 and 2AF-05-07;
- UT of pipe-to-elbow weld, 16” FW weld, 2FW-02-17;
- UT of elbow-to-pipe weld, 16” FW weld, 2FW-02-18;
- UT of pipe-to-elbow weld, 6” safety injection weld, 2SI-02-41;
- UT of elbow-to-pipe weld, 6” SI weld, 2SI-02-42;
- UT of elbow-to-tee weld, 12” RC weld, 2SI-02-46;
- UT of pipe-to-elbow, 6” RC weld, 2RC-11-15;
- UT of pipe-to-elbow, 6” RC weld, 2SI-02-41;
- UT of pipe-to-elbow, 16” FW weld, 2FW-04-19;
- Visual examination (VT-3) of SI strut 2SI01013R, 2SI03021R, and 2SI21001R;
- VT-3 of strut 2RH02029R;
- VT-3 of essential service water strut 2SX09119X;
- VT-3 of essential service water strut 2SX09044X; and
- VT-3 of snubber supports 2MS01074BS, 2MS01092BS and 2MS01092AS.

The inspectors reviewed the following examination completed during the previous outage with relevant/recordable conditions/indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI, or an NRC-approved alternative.

- Indication, radiographic examination rejected on Diverse and Flexible Coping Strategies (FLEX) piping shop weld (WO 1692238-10).

The inspectors either observed or reviewed the following pressure boundary welds completed for risk-significant systems since the beginning of the last refuelling outage to determine if the licensee applied the pre-service NDEs, and acceptance criteria required by the Construction Code and ASME Code, Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedures were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- modify support of Class 2 boric acid safety 2AB23B044X per WO 1662830-07;
- FLEX mod cross connection, 8” o-let to 36” elbow, 2SX02AB, per WO 1722811-41; and
- FLEX mod installation/repair of 4” SI system piping weld #2 (2SI03AB) per WO 1692238-10.

b. Findings

No findings were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

A bare metal visual (BMV) examination was required this outage pursuant to Title 10, *Code of Federal Regulations* (10 CFR), Part 50.55a(g)(6)(ii)(D).

The inspectors reviewed a CD of the BMV examination conducted on the reactor vessel head at each of the penetration nozzles to determine whether the activities were

conducted in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). Specifically, to determine:

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

A non-visual inspection of the reactor vessel head penetrations was not required this outage. Therefore, no NRC review was completed for this inspection procedure attribute.

The licensee did not perform any welded repairs to vessel head penetrations since the beginning of the preceding outage. Therefore, no NRC review was completed for this inspection procedure attribute.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

The inspectors performed an independent walkdown of the RC system and related lines in the containment, which had received a recent licensee boric acid walkdown, and verified whether the licensee's boric acid corrosion control VTs emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following licensee evaluations of RC system components with boric acid deposits to determine if degraded components were documented in the CAP. The inspectors also evaluated corrective actions for any degraded RC system components to determine if they met the ASME Section XI Code.

- 2CV844; boric acid at bolted connection and;
- 2PS9350B; boric acid at bolted connection.

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

- IR 1659448; Corrosion at Flange, 2FE-0428;
- IR 1655470; OSP-A Dry Boric Acid Leakage 2SI30D023G Flange; and
- IR 1655585; OSP-A Dry Boric Acid at the Bolted Connection to 2RE01T.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

No exams were required this outage. Therefore, no NRC review was completed for this inspection procedure attribute.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

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

- the licensee had established an appropriate threshold for identifying ISI/SG-related problems;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On November 12, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- the ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- 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 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 October 5, 2015, the inspectors observed control room operator's response to a loss of feedwater event in Mode 3. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- 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 systems:

- Unit 1 essential service water system;
- Maintenance Rule Periodic (a)(3) assessment; and
- Unit 2 residual heat removal (RHR) system.

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;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/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 three quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- Planned Yellow risk configuration: Unit 1;
- Unplanned Orange risk configuration: failure of the Unit 2 shutdown cooling heat exchanger outlet valve (2RH606) to open during reduced inventory;
- Planned Yellow risk configuration: Unit 2 reduced RCS inventory operations during head removal and installation;
- Planned Yellow risk configuration: safety-related 4kV bus 241 outage;
- emergent work: manual trip of 1B turbine drive FW pump due to flow oscillations on December 4, 2015; and

- emergent work: availability of essential service water during repair of the 0SXH2AA-6" common drain line.

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

Unresolved Item: Loss of Shutdown Cooling Train during Refueling Cavity Fill and Associated Reduced Inventory Operations

Introduction: On October 8, 2015, the inspectors identified an Unresolved Item (URI) regarding the failure of valve 2RH606, which is the 2A RHR heat exchanger flow control valve. The valve's failure to open caused a loss of one train of shutdown cooling, and an unplanned Orange risk configuration with Unit 2 in Mode 6, and the reactor refueling cavity level less than 23 feet above the vessel flange. At the closure of the inspection period, the licensee's investigation on the cause of the failure was ongoing. Resolution of this issue will be based on the inspector's review of the licensee's completed investigation.

Description: A function of the RHR system in Mode 6 is to remove decay heat and sensible heat from the reactor coolant system (RCS). Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchangers where the heat is transferred to the component cooling water system. The coolant is then returned to the RCS via the RCS cold legs.

On October 8, 2015, valve 2RH606 became mechanically bound while in the process of filling the Unit 2 reactor refueling cavity to greater than 23 feet. This was identified when the operators attempted to open the valve from the control room. The failure of the valve to open caused Unit 2 shutdown risk to change from a planned Yellow configuration to unplanned Orange condition. Additionally, the licensee entered Limiting Condition for Operation 3.9.6, "Residual Heat Removal and Coolant Recirculation-Low Water Level," Condition A, for one train of RHR cooling inoperable. This action required the licensee to initiate actions immediately to either restore the affected RHR loop to operable status or to initiate actions to establish greater than or equal to 23 feet of water above the reactor vessel flange. The licensee accomplished this action by raising water level in the cavity to greater than 23 feet.

Troubleshooting of the failed valve revealed that a shaft key sheared, which prevented the valve from opening. The valve had been previously manipulated during the outage

without an issue. The malfunctioning part was sent offsite for failure analysis. The valve was repaired. At the conclusion of the inspection, an apparent cause investigation was in process. This URI will remain open until the investigation is complete and the inspectors review the report to determine whether a performance deficiency exists. **(URI 05000457/2015004–01; Loss of Shutdown Cooling Train During Refueling Cavity Fill and Associated Reduced Inventory Operations)**

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Operability Evaluation 2015-005, RCS cooldown analysis with increased component cooling water temperature;
- Operability Evaluation 2015-006, excessive seat leakage through the 1A essential service water pump discharge check valve;
- diesel oil storage tank fill capability to the diesel driven auxiliary feedwater system day tank; and
- heavy external corrosion on common unit common essential service water drain line 0SXH2AA-6.

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

This operability inspection constituted four samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

.2 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors reviewed the following issue:

- extraction steam valve 1ES004 packing leak.

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of operator workarounds (OWAs) on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the Attachment were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their CAP and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

This review constituted one operator workaround annual inspection sample as defined in IP 71115–02.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- Unit common essential service water 0SXH2AA-6 drain line repair.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not adversely affect the operability or availability of the safety-related essential service water system. The inspectors observed ongoing and completed work activities to ensure that the modification was installed as directed and consistent with the design control documents; the modification was installed and 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 licensee staff 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 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 activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Unit 2 startup feedwater pump phase A overcurrent trip (WO 01866639);
- 2A FW pump inboard journal bearing greater than 200 degrees Fahrenheit (WO 01662678);
- 2C reactor coolant pump labyrinth seal tolerance out of spec (IR 2571030);
- 2A RC pump coupling alignment out-of-tolerance 0.001 (IR 2570482);
- Unit 2 containment isolation valve (CIV) 2FP010 failed post maintenance testing (WO 01723328);
- Unit 2 essential service water valve 2SX143B preventative maintenance (WO 01751593); and
- Unit 2 component cooling water valve 2CC9486 corrective maintenance (WO 01611951).

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): whether the effect of testing on the plant had been adequately addressed; whether testing was adequate for the maintenance performed; whether acceptance criteria were clear and demonstrated operational readiness; whether test instrumentation was appropriate; whether tests were performed as written in accordance with properly reviewed and approved procedures; whether equipment was returned to its operational status following testing (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 seven post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the Unit 2 refueling outage (RFO), conducted October 4 – 26, 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 TS when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of RC pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and OSP requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TS;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling and sipping to detect fuel assembly leakage;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment.

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

b. Findings

(1) Failure of the Startup Feedwater Pump to Start during Unit 2 Plant Shutdown

Introduction: The inspectors identified an URI based upon the startup feedwater pump's (SUFWP's) failure to start during a plant shutdown. In addition to being used in plant startups and shutdowns, the SUFWP is also credited in the licensee's emergency operating procedure as a means to add water to the steam generators for decay heat removal if the safety-related auxiliary feedwater systems failed to function properly during an event.

Description: On October 4, 2015, operations attempted to start the Unit 2 SUFWP at low power in Mode 1 during plant shutdown activities for a refueling outage. Upon start, the SUFWP automatically tripped. The licensee completed an apparent cause evaluation to determine the reason why the pump did not start and run.

At the end of the inspection period, the inspectors were awaiting additional information to complete their review to determine if this issue of concern constituted a performance deficiency. This URI will remain open pending this review. **(URI 05000457/2015004-02, Failure of the Startup Feedwater Pump to Start During a Plant Shutdown)**

(2) Failure to Establish Adequate Operational Functional Guidance for the Motor Driven Main Feedwater Pump During a Normal Plant Shutdown

Introduction: A finding of very low safety significance and an associated Non-Cited Violation (NCV) of TS 5.4.1, "Procedures," was self-revealed on October 5, 2015, due to the licensee's failure to establish and maintain adequate guidance for operating the Unit 1 and Unit 2 MDFWP during plant shutdown conditions. As a result, on October 4, 2015, during a Unit 2 plant shutdown, the Unit 2 MDFWP was placed in service at low forward feedwater flow conditions and was manually tripped when the pump's main journal bearing temperature exceeded the procedural limit. Subsequent review, determined that the procedural limit was too low as previously recognized by historic station specific operating experience.

Description: On October 4, 2015, operations attempted to start the Unit 2 SUFWP at low power in Mode 1 during plant shutdown activities for a refueling outage. Upon start, the SUFWP automatically tripped. The cause for the pump not starting is still under inspector review (Reference: Unresolved Item 05000456/2015004-02).

Operations subsequently started the Unit 2 MDFWP to provide feedwater flow to the steam generators. Operations manually tripped the MDFWP approximately forty minutes into operation due to the pump's inboard journal bearing temperature approaching the procedural limit of 200 degrees F.

Upon tripping the only available main feedwater pump, auxiliary feedwater automatically initiated on low steam generator water level conditions. (Note: Braidwood does not use the two turbine driven feedwater pumps for plant shutdowns). Both auxiliary feedwater pumps operated adequately during the transient and were able to effectively restore steam generator water level until secondary plant pressure was reduced low enough to allow the condensate/condensate booster pumps to provide water to the generators.

The licensee entered the SUFWP and MDFWP issues into the CAP and performed a common apparent cause investigation regarding the SUFWP's failure to start and the MDFWP's failure to run.

The licensee determined that the there was no apparent cause for the elevated MDFWP journal bearing temperatures when operating the pump in low forward flow conditions but, to the contrary, it was expected. Specifically, the licensee had previously determined that hotter bearing temperatures are expected to occur at low feedwater forward flow conditions based upon the effect that cooler water temperatures from higher recirculation flow has on bearing loading. The licensee had previously concluded that these cooler water temperatures resulted in a pump, gearbox, and motor alignment different than when the pump was operated at higher flow conditions. Furthermore, the licensee had determined that the elevated bearing temperatures were acceptable. The station identified that these higher bearing temperatures had been observed before during periods of low flow operations (In 1998, Braidwood Unit 2 operated for a period of time at low power, running the MDFWP on recirculation and pump journal bearing temperature reached 210 degrees F for 12 minutes and remained above 200 degrees F for 53 minutes without any adverse condition noted). Additionally, the licensee's startup procedure (BwOP FW-8) permitted a maximum MDFWP journal bearing temperature of 225 degrees F.

The licensee entered this issue into the CAP as IR 2565486. Corrective action consisted of an assessment of the MDFWP bearing for bearing and journal damage, performing an apparent causal evaluation, and updating the plant shutdown procedure to reflect the allowable higher operating limit.

Analysis: The inspectors determined that the failure to have adequate operational guidance for the MDFWP during a normal plant shutdown was a violation of TS 5.4.1 and a performance deficiency. Specifically, the licensee had historically understood that higher journal bearing temperatures could be expected during low MDFWP forward flow conditions but had failed to retain this knowledge and capture it within the appropriate procedures used for shutting down the plant.

The inspectors determined that the performance deficiency was more than minor and associated with both Unit 1 and Unit 2 in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," dated September 7, 2012 because the issue was associated with the Procedural Quality attribute of the Initiating Event cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the performance deficiency contributed to a loss of main feedwater event that upset plant stability and challenge the critical safety function of removing decay heat via the SGs in Mode 3. For Unit 1, the increased potential for a loss of main feedwater event existed under similar conditions.

The inspectors determined that the safety consequences for the performance deficiency could be evaluated using IMC 0609, "Significant Determination Process," and IMC 0609 Appendix A, "Significance Determination Process for at Power Findings," dated June 19, 2012. The inspector's determined that the finding required a detailed risk evaluation because the finding was associated with post reactor trip conditions and resulted in a loss of main feedwater to the steam generators.

To evaluate the risk significance of the finding, the Senior Reactor Analyst used the Braidwood Standardized Plant Analysis Risk model version 8.24 and the Systems Analysis Programs for Hands-on Integrated Reliability Evaluations version 8.1.2 software.

A "Transient" initiating event was used to model a Reactor Trip. The initiating event frequency (IEF) of a Transient initiating event is 6.9E-1/yr per the Standardized Plant Analysis Risk model. For the Degraded Case, the Conditional Core Damage Probability (CCDP) of a Transient initiating event with a failure-to-run of the MDFWP while the reactor is in Mode 3 (i.e., a non-Anticipated Transient Without Scram event is 4.16E-7. For the Base Case, the CCDP of a Transient initiating event while the reactor is in Mode 3 is 3.64E-7. The delta CCDP (ΔCCDP) is the difference between the CCDP for the Degraded Case and the CCDP for the Base Case or 5.2E-8 (i.e., ΔCCDP = 4.16E-7 – 3.64E-7 = 5.2E-8).

An estimate of the delta core damage frequency (ΔCDF) due to the performance deficiency is obtained by multiplying the IEF of the event (6.9E-1/yr) times the ΔCCDP if the initiating event were to occur (5.2E-8). The result is an estimated ΔCDF of 3.6E-8/yr. The dominant sequence was a transient initiating event with the failure of the auxiliary FW system, failure of main FW, and the failure of feed and bleed.

Based on the detailed risk evaluation, the inspectors determined that the finding was of very low safety-significance (Green).

The inspectors concluded that this finding did not have a cross-cutting aspect because the performance deficiency was greater than three years old and, therefore, not indicative of recent performance.

Enforcement: Technical Specification 5.4.1 requires, in part, that written procedures shall be established, implemented, and maintained covering the activities in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, dated February 1978. RG 1.33, Appendix A, dated February 1978, Section 4, specifies procedures startup, operation, and shutdown for systems including the feedwater water systems (i.e. Section 4.k).

Contrary to the above, prior to October 4, 2015, the licensee had not established, implemented, and maintained procedures for operation of the MDFWP during plant shutdown conditions and associated changes in modes of operations. Specifically, station procedures were determined to be the direct cause or the MDFWP failure to run during a plant shutdown which resulted in an unnecessary start of the engineered safeguard featured auxiliary feedwater system to maintain core decay heat removal capability. This violation was determined to be applicable to both Braidwood Unit 1 and Unit 2 because the violation existed in both units. Because this violation was of very low safety significance, and was entered into the licensee's CAP, as IR 2565442, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy **(NCV 05000456/2015004-03; 05000457/2015004-03, Failure to Establish Adequate Feedwater Pump Operational Guidance during a Normal Plant Shutdown)**.

(3) Failure to Establish a Written Procedure for a Loss of Feedwater Event in Mode 3

Introduction: A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1 "Procedures," was self-revealed on October 5, 2015, due to the licensee's failure to establish a written procedure for combating emergencies and

other significant events, as required by RG 1.33 “Quality Assurance Program Requirements.” Specifically, upon a loss of feedwater in Mode 3 (Hot Standby), which is an expected design and licensing basis event, the licensee did not have a written procedure for combating the event as established by the RG.

Description: During the planned down power for entry into refueling outage A2R18, on October 4, 2015, the Unit 2 SUFWP pump failed to start at approximately low power. The SUFWP is a 5300 gallons per minute (gpm) non-safety pump, which is the normal source of feedwater during unit startup and shutdown. As a result of the unavailability of the SUFWP, the 2A MDFWP was manually started to supply feedwater to the Unit 2 steam generators for decay heat removal and cooldown.

Unit 2 entered Mode 3 at midnight [CDT], on October 5, 2015. At 12:38 a.m. [CDT], the 2A MDFWP was manually secured due to pump inboard journal bearing temperature exceeding its 200 degree°F operating limit listed in the shutdown procedure. Consequently, a loss of feedwater event occurred in Mode 3. As operators responded, they referenced 2BwOA SEC-1, “Secondary Pump Trip,” and BwOP AF-11, “Filling the Steam Generators Utilizing the Motor Driven Auxiliary Feedwater Pump A.” However, 2BwOA SEC-1 did not contain steps that adequately covered a total loss of a feedwater while the reactor was non-critical and in Mode 3. Additionally, BwOP AF-11 outlined the steps necessary to fill the SGs utilizing the MDFWP when in Modes 4, 5, 6, or defueled, but did not cover Mode 3 operation.

Using the above mentioned procedures as reference, the operators responded to this event by reducing steam generator blowdown and attempting to raise condensate booster system discharge flow in an effort to provide flow into the steam generators. Additionally, the operators established a critical parameter of 40 percent steam generator level to establish flow to the generators from the auxiliary feedwater pumps. However, at the time of the event the operators did not immediately recognize that the ongoing plant cooldown had not sufficiently reduced pressure such that the condensate booster pumps had the ability to feed the steam generators before the SG low-2 water level (36.3 percent) was reached. Additionally, it was not recognized that the critical parameter of 40 percent steam generator level was too close to the SG low-2 level, and, with the 1 percent per minute inventory loss in the steam generator, did not allow for the manual start of the 2A or 2B auxiliary feedwater pump prior to the emergency signal initiation.

At 1:05 a.m. [CDT], an automatic auxiliary feedwater safety actuation signal was generated on SG low-2 level (36.3 percent) and both the 2A and 2B auxiliary feedwater pumps auto-started. An additional reactor protection system reactor trip signal was received due to the SG low-2 level (36.3 percent) with the reactor not critical. Both auxiliary feedwater trains operated as designed.

Based on the information presented above, the licensee’s investigation concluded that there were two apparent causes for the event. The first apparent cause was that “the critical parameter initially selected was not appropriate given the plant conditions and it was not revised, reevaluated, or challenged as the event progressed to ensure that the actions necessary to start the auxiliary feedwater pump could be completed in the available time.” The second apparent cause was that “the absence of procedure guidance delayed the crew’s response by requiring the crew to operate in knowledge

space and adapt procedures while responding to the event." The inspectors reviewed the results of the investigation and did not identify any further concerns.

The licensee entered this issue into the CAP as IRs 2566239, and 2565513. Corrective actions for this event included revising procedures to include guidance in existing procedures for a loss of a feed pump and/or a complete loss of feed when the reactor is not critical.

Analysis: The inspectors determined that the failure to establish a procedure for combating a loss of feedwater event in Mode 3, as required by RG 1.33, Section 6, was a performance deficiency that warranted a significance determination. Specifically, on October 4, 2015, the licensee experienced a loss of feedwater event while in Mode 3, which was not covered by a written procedure as specified in RG 1.33, Section 6.j.

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 it was associated with the Mitigating Systems cornerstone Procedural Quality attribute, and adversely impacted the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the absence of a procedure(s) complicated the operator response to the loss of feedwater event in Mode 3. The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2 for the Mitigating Systems Cornerstone, dated June 19, 2012. The inspectors answered "No" to the Mitigating Systems questions under Section A, "Mitigating Systems, Structures, and Components and Functionality" and screened the finding as having very low safety significance (Green).

The inspectors did not identify a cross-cutting aspect associated with this finding because it was confirmed not to be reflective of current performance due to the age of the performance deficiency.

Enforcement: Technical Specification 5.4.1 requires that written procedures shall be established, implemented, and maintained covering the activities in RG 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 6, specifies procedures for combating emergencies and other significant events, including a loss of feedwater or feedwater system failure.

Contrary to the above, prior to October 5, 2015, the licensee did not have a procedure to cover the loss of feedwater event during Mode 3. Specifically, the design and licensing basis of the plant was the loss of feedwater event in Modes 1, 2 and 3. Conversely, the operators had to reference two separate procedures to address the loss of feedwater event that occurred on October 4, 2015, which complicated and impacted the operations crew's response to changing plant conditions during this transient. Because this violation was of very low safety significance, and was entered into the licensee's CAP as IRs 2566239 and 2565513, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy **(NCV 05000456/2015004-04; 05000457/ 2015004-04, Failure to Establish a Written Procedure for a Loss of Feedwater Event in Mode 3)**.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- Unit 2 main steam safety valve testing (Routine);
- Unit 2 auxiliary feedwater full flow testing (Routine);
- Unit 1 residual heat removal train A quarterly valve stroke (Routine); and
- Unit 2 instrument air CIV local leak rate test.

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

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

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

Documents reviewed are listed in the Attachment.

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

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

a. Inspection Scope

The regional inspectors performed an in-office review of the latest revisions to the Emergency Plan, Emergency Action Levels and Emergency Action Level Bases document to determine if these changes decreased the effectiveness of the Emergency Plan. The inspectors also performed a review of the licensee's 10 CFR 50.54(q) change process, and Emergency Plan change documentation to ensure proper implementation for maintaining Emergency Plan integrity.

The NRC review was not documented in a Safety Evaluation Report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

This Emergency Action Level and Emergency Plan Change inspection constituted one sample as defined in IP 71114.04-06.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on November 12, 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 and main control room to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering

them into the Corrective Action Program. 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)

The inspection activities supplement those documented in IR 05000456/2015002; IR 05000457/2015002, and constitute one complete sample as defined in IP 71124.01-05.

.1 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

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

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

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 IR 05000456/2014003; IR 05000457/2014003 and IR 05000456/2015002; IR 05000457/2015002, and constitute one complete sample as defined in IP 71124.02-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's 3-year rolling average collective exposure.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

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

- Radiation Work Permit (RWP)-10017293; A2R18 Radiography on Fukushima Flex Mod. Piping in the Auxiliary Building;
- RWP-10017333; A2R18 Reactor Cavity Decontamination with Added Controls;
- RWP-10017801; A2R18 SG Bowl Drain Replacement Project; and
- RWP-10017322; A2R18 Reactor Head Disassembly and Reassembly.

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

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

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.06)

a. Inspection Scope

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours (1E03) performance for Braidwood Unit 1 and Unit 2 for the period from the 1st quarter 2015 through the 4th quarter 2015. To determine the accuracy of the Performance Indicator (PI) data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 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, maintenance rule records, event reports and NRC Integrated Inspection Reports for the period of January 1 through December 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 transients per 7000 critical hours samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system (RCS) Leakage (B102) performance for Braidwood Unit 1 and Unit 2 for the period from the 3rd quarter 2014 through the 3rd quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the 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, RCS leakage tracking data, IRs, event reports and NRC Integrated Inspection Reports for the period of July 1, 2014 through September 30, 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 RCS leakage samples 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of July 1, 2015, through December 5, 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.

.4 Selected Issue Follow-Up Inspection: Essential Service Water System Leaks

a. Inspection Scope

On May 29, 2015, the licensee documented in IR 2507433 that recent issues with through wall leaks have resulted in numerous limited condition of operation (LCO) entries, equipment unavailability, and emergent repairs. Examples of the leaks included two pinhole leaks from the essential service water system raw water piping that resulted in LCO entries, which affected the 1A emergency diesel generator, and the Unit 1 component cooling water heat exchanger. Additionally, a pinhole leak occurred in the essential service water supply to the auxiliary feedwater system. As a results of these issues, the licensee developed a plan to review susceptible areas of the system to ensure piping required for the repairs was available.

During this inspection period, the inspectors reviewed the licensee's plan to address essential service water pipe leaks, reviewed applicable IRs, and conducted meetings with engineering personnel.

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

b. Findings

No findings were identified. As described above, due, in part, to three essential service water system leaks occurring since May 2014, the licensee documented in IR 2507433 the licensee's corrective action to develop an action plan to address mitigating actions for potential future leaks. The causes for the leaks that had been recently identified included: localized corrosion downstream of throttle valves, and microbiological induced corrosion.

The action plan developed by the licensee included: (1) identifying all butterfly valves in the essential service water system that are used to throttle flow, and create plans to inspect piping or fittings downstream of the essential service water throttle valves; (2) reviewing the list of essential service water throttle valves to determine susceptibility to cavitation and develop an inspection plan to identify if cavitation is occurring; (3) create IRs to inspect flanges where cavitation may be occurring to determine if the areas are degrading; (4) develop a list of piping that is not isolable from the main essential service water system that would result in a short term unplanned LCO action statement entry; (5) review the list of piping areas that are not isolable from the main essential service water system for which code cases would not be applicable if a leak were to occur; and (6) plan for contingency material to be available for non-isolable essential service water piping.

Based on all the information previously provided the inspectors were concerned that, even though the licensee had been preparing on how to deal with leaks once they developed, the inspectors were not aware of preventive measures. The inspectors shared these concerns with licensee personnel. The licensee provided the inspectors their planned actions to inspect piping or fittings downstream of the essential service water throttle valves using either guided wave or UT.

On November 19, 2015 planned inspections on the 0SX165A valve pit revealed heavy general corrosion on a drain line. The line is part of the common essential service water train "A" return line to the essential service water pond. Based on this discovery the licensee started a root cause evaluation to investigate the reason behind the heavy corrosion. At the conclusion of this inspection the investigation was still in progress. Once completed, the inspectors will review the report to assess the licensee planned actions to mitigate/prevent future leaks.

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000456/2014003-01; 05000457/2014003-01, Issues that Could Adversely Affect the Ultimate Heat Sink

a. Inspection Scope

As discussed in NRC Inspection Report 05000456/2014003; 05000457/2014003, this URI was opened to evaluate four issues of concern identified by the inspectors after the licensee discovered that station procedures to address a failure of the Braidwood cooling lake dike did not include steps to secure nonsafety-related pumps that could deplete the ultimate heat sink volume over time. Issues of concern #1, #2, and #3 of the URI had been previously reviewed by the inspectors and discussed in NRC Inspection Report 05000456/2014004; 05000457/2014004. One Green NCV was documented as a result of this review, 05000456/2014004-02; 05000457/2014004-02, "Multiple Failures to Follow Operability Evaluation Process Following Discovery of a Non-Conforming Condition in the Ultimate Heat Sink."

Issue of concern #4, "Safety Category II Structure, Systems, and Component Interaction with the Ultimate Heat Sink" was reviewed during this inspection period.

All issues of concern related to this URI have been reviewed by the inspectors. This URI is closed.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Ms. M. Marchionda, Site Vice President, and other members of the licensee staff on January 11, 2016. The inspectors confirmed 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 results of the ISI inspection were discussed with Mr. M. Kanavos on October 16, 2015.
- On October 19, 2015, the inspectors presented the inspection results regarding radiological hazard assessment and exposure controls, and occupational ALARA planning and controls with Mr. M. Kanavos, and other members of the licensee staff.
- The annual review of Emergency Action Levels and Emergency Plan changes with the licensee's Emergency Preparedness Coordinator, Ms. D. Poi, via telephone on December 11, 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. Marchionda, Site Vice President
A. Ferko, Plant Manager
J. Bashor, Engineering Manager
J. Cady, Radiation Protection Manager
B. Casey, ISI Program Owner
K. Dovas, Training Director
B. Finlay, Site Security Manager
G. Golwitzer, Regulatory Assurance Manager
R. Hall, Chemistry Manager
C. Ingold, Maintenance Manager
J. Miller, NDES Level III
D. Poi, Emergency Preparedness Manager
P. Raush, Operations Manager
S. Reynolds, Nuclear Oversight Manager
M. Shue, Welding Administrator
M. Struck, Maintenance Program Manager
R. Schliessmann, NRC Coordinator

U.S. Nuclear Regulatory Commission

J. Jandovitz, Acting Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000457/2015004-01	URI	Loss of Shutdown Cooling Train During Refueling Cavity Fill and Associated Reduced Inventory Operations (Section 1R13.1b)
05000457/2015004-02	URI	Failure of Startup Feedwater Pump to Start During Plant Shutdown (Section 1R20.1b(1))
05000456/2015004-03; 05000457/2015004-03	NCV	Failure to Establish Adequate Feedwater Pump Operational Guidance During a Normal Plant Shutdown (Section 1R20.1b(2))
05000456/2015004-04; 05000457/2015004-04	NCV	Failure to Establish a Written Procedure for a Loss of Feedwater Event in Mode 3 (Section 1R20.1b(3))

Closed

05000456/2015004-03; 05000457/2015004-03	NCV	Failure to Establish Adequate Feedwater Pump Operational Guidance During Plant Shutdown (Section 1R20.1b(2))
05000456/2015004-04; 05000457/2015004-04	NCV	Failure to Establish a Written Procedure for a Loss of Feedwater Event in Mode 3 (Section 1R20.1b(3))
05000456/2014003-01; 05000457/2014003-01	URI	Issues that Could Adversely Affect the UHS (Section 4OA5)

Discussed

05000456/2014004-02; 05000457/2014004-02	NCV	Multiple Failures to Follow Operability Evaluation Process Following Discovery of a Non-Conforming Condition in the Ultimate Heat Sink (Section 4OA5)

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

- NO-AA-220-1009; Winter Readiness; Revision 1
- WC-AA-107; Seasonal Readiness; Revision 16

1R04 Equipment Alignment

- BwOP FC-M1; Operating Mechanical Lineup Unit 1 Fuel Pool Cooling; Revision 9
- BwOP FC-M2; Operating Mechanical Lineup Unit 2 Fuel Pool Cooling; Revision 7
- BwOP AF-M2; Operating Mechanical Lineup Unit 2 Auxiliary Feedwater System; Revision 18
- 2BwGP 100-2; Plant Start Up; Revision 23

1R05 Fire Protection

- BwMS 3350-002; Semi-Annual Inspection of Fire Protection Program Required Fire Doors; Revision 12
- Pre-Fire Plan #44; SGA 426' Division 21 ESF Switchgear Room
- Pre-Fire Plan #42; SGA 426' Division 22 ESF Switchgear Room
- Pre-Fire Plan #90; DG 401' Diesel Generator Room 1A & Day Tank Room

1R06 Flood Protection Measures

- IR 2526097; OPS ID: Groundwater Intrusion at 369' TB Cable Vault Pens; Dated July 9, 2015
- IR 2526103; 2CC01PA Breaker Stationary Aux. Switch S-2 Not Made Up; Dated July 9, 2015
- BwMS 3350-002; Semi-Annual Inspection of Fire Protection Program Required Fire Doors; Revision 12

1R08 Inservice Inspection Activities

- IR 02479588; OSP-A Rejectable Indication on CRDM Pen 69 Weld Buildup; Dated April 3, 2015
- IR 02552333; Fukushima RT Weld Failed X-Ray; Dated September 8, 2015
- IR 01660383; A2R17 FME Foreign Object Summary of the 2D SG Secondary Side; Dated May 15, 2014
- IR 01660308; A2R17 Foreign Object Summary of the 2C SG Secondary Side; Dated May 15, 2014
- IR 01660271; A2R17 Foreign Object Summary of the 2B SG Secondary Side; Dated May 15, 2014
- IR 01660257; A2R17 Foreign Object Summary of the 2A SG Secondary Side; Dated May 15, 2014
- IR 01655470; OSP-A Dry Boric Acid Leakage 2SI30D023G Flange; Dated May 3, 2014
- IR02395860; Linear Indications at 2nd LOC during Pre-Freeze NDE (MT); Dated October 15, 2014

- IR 01655323; OSP-A 2RC8042B Dry Boric Acid Leakage Valve Stem Replace Diaphragm; Dated May 3, 2014
- IR 01655578; OSP-A Dry Boric Acid at the Bolted Connection on the 2CV8160; Dated May 4, 2014
- IR 01655574; Dry Boric Acid at Bolted Connection & Packing 2RC8037C (DUP); Dated May 4, 2014
- IR 02571860; NRC Questions Regarding Containment Liner; Dated October 16, 2015
- ER-AP-331; Boric Acid Corrosion Control (BACC) Program; Revision 7
- ER-AP-331-1002; BACC Program Identification, Screening and Evaluation; Revision 8
- ER-AP-331-1003; RCS Leakage Monitoring and Action Plan; Revision 7
- ER-AA-335-015-2003; VT-2 Visual Examination in Accordance with ASME 2001 Edition, 2003 Edition; Revision 0
- ER-AA-335-002; Liquid Penetrant (PT) Exam; Revision 6
- EXE-PDI-UT-2; Ultrasonic Inspection of Austenitic Piping Welds in Accordance with PDI-UT-2; Revision 7
- A2R18 CD of the BMV Examination Conducted on the Reactor Vessel Head at Each of the Penetration Nozzles
- Report No. A2R18-UT-006; UT Examination of 2SI-02-41; Dated October 8, 2015
- Report No. A2R18-UT-013; UT Examination of 2FW-04-20; Dated October 10, 2015
- Report No. A2R18-UT-012; UT Examination of 2FW-04-19; Dated October 10, 2015
- Report No. A2R18-UT-008; UT Examination of 2RC-11-15; Dated October 9, 2015
- Report No. A2R18-UT-009; UT Examination of 2SI-02-46; Dated October 10, 2015
- Report No. A2R18-UT-007; UT Examination of 2SI-02-42; Dated October 8, 2015
- Work Order 1512187; Braidwood Unit 2 ASME Section XI IWL Concrete Repairs and Monitoring -2PC01R; Dated July 15, 2014
- WO 1689688; CM-A1R18 – Buff; PT and/or Weld Pen 69 as Required per EC; Dated April 6, 2015
- WO 1662830; Changes to U-2 AB System due to Transient Analysis; Dated March 5, 2014
- WO 1692238; ECCS FLEX Suction and High Head Injection Conn per EC#394161; Dated April 29, 2015
- WPS 1-8-GTSM-PWHT; WPS for Manual GTAW/SMAW P1 to P8 Material; Revision 1
- PQR 1-53B; PQR for WPS 8-1-GTSM; Dated January 29, 1986
- PQR 2-53A; PQR for WPS 8-1-GTSM; Dated February 12, 1986
- PQR 002-41-055; PQR for WPS 8-1-GTSM; Revision 0
- WPS 1-1-GTSM WPS for Manual GTAW/SMAW P1 to P1 Material; Revision 0
- PQR TE1.1-6-6”; PQR for WPS 1-1-GTSM; Revision 0
- ASME-1973 Section III, Division 2; Proposed Standard Code for Concrete Reactor Vessels and Containments Issued for Trial Use and Comments; Dated 1973
- Braidwood Operating Experience Review of Information, Notice 2014-07; Degradation of Leak-Chase Channel Systems for Floor Welds of Metal Containment Shell and Concrete Containment Metallic Liner; Dated August 4, 2014
- Calculation No. 5.2.6.1; Containment Liner; Revision 0
- Calculation No. 5.2.6-BRW-09-0041; Evaluation of Units 1 and 2 Containment Liner Plate due to Identified Gouges; Minor Revision 0A
- Engineering Change 395237; Braidwood Unit 2 Effective Degradation Years (EDY) and Re-inspection Years (RIY) Evaluation per ASME Code Case N-729-1; Dated May 29, 2014
- Engineering Change 398129; Evaluate Failed Snubber Drag Test-2MS01074S; Revision 0
- Issue Report 1655635; OSP-A A2R17 Snubber 2MS01074BS Failed Test (No Expans. Req.); Dated May 4, 2014
- IR 2479135; OSP-A Pipe Clamp For 1RY09081S Rotated out of Tolerance; Dated April 3, 2015

- Procedure No. ER-AP-335-001; Bare Metal Visual Examination for Nickel Alloy Materials; Revision 4
- Procedure No. ER-AA-335-016; VT-3 Visual Examination of Component Supports, Attachments and Interiors of Reactor Vessels; Revision 9
- Procedure No. ER-AA-335-018; Visual Examination of ASME IWE Class MC and Metallic Liners of IWL Class CC Components; Revision 11
- Procedure No. ER-AA-335-019; Visual Examination of ASME IWL Class CC Containment Components; Revision 0
- VT-3 Visual Examination NDE Report for Snubber 2MS01074BS; Dated October 15, 2015
- VT-3 Visual Examination NDE Report for Snubber 2MS01074AS; Dated May 19, 2014
- VT-3 Visual Examination NDE Report for Snubber 2MS01092BS; Dated October 15, 2015
- VT-3 Visual Examination NDE Report for Snubber 2MS01092AS; Dated October 15, 2015
- VT-3 Visual Examination NDE Report for Snubber 2MS01079S; Dated October 24, 2006
- VT-3 Visual Examination NDE Report for Snubber 2MS01097S; Dated March 18, 2008
- WO 1512187; Braidwood Unit 2 ASME Section XI IWL Concrete Repairs and Monitoring -2PC01R; Dated April 4, 2014
- WO 1597468; Braidwood Unit 2 ASME Section XI IWE Containment Inspection; Dated May 5, 2014
- Drawing No. S-877; Containment Building Structural Arrangement; Revision W
- Sargent and Lundy Letter to Commonwealth Edison Braidwood Station Units 1 and 2; Containment Liner – Extra Work and Rework S & L Specification: L-2725, CBI Contract Nos. 74-2270, 74-2270EX, 74-2270RWK, 74-2271, 74-2271EX, 74-2271RWK; Dated April 1, 1988

1R11 Licensed Operator Requalification Program

- Simulator Scenario; Dated November 12, 2015

1R12 Maintenance Effectiveness

- IR 1607743; U1 SX MSPI at Risk Status; Dated January 14, 2014
- IR 1608652; Inconsistent Valve Stroke PMT Preparation; Dated January 15, 2014
- IR 1609372; Adverse Trend in 1SX01PB Differential Pressure; Dated January 17, 2014
- IR 1612517; Valve Stem Leakage (1SX168); Dated January 25, 2014
- IR 1619901; SX A Scale Inhibitor Feed Isolated Due to Leak; Dated February 11, 2014
- IR 1620063; 2A/2B RH Pump Suction Pressure Trend Anomaly; Dated February 12, 2014
- IR 1627419; 1SX004 Indicated Duel on U1 HX Return to Service; Dated February 28, 2014
- IR 1631448; 1SX01PA Oil Pump Discharge Line Flange Weeping Oil; Dated March 7, 2014
- IR 1632273; U1 SX MSPI Status Look Ahead; Dated March 112, 2014
- IR 1632951; Need 1A SX Pump Power Consumption During ASME Surveillance; Dated March 13, 2014
- IR 1632953; Need 1B SX Pump Power Consumption During ASME Surveillance; Dated March 13, 2014
- IR 1637878; 1SXB1AB-3 Pre-Freeze UT Reading Below 87.5 percent; Dated March 24, 2014
- IR 1638728; Documentation of 1B SX Troubleshooting Pump Trend; Dated March 25, 2014
- IR 1649986; SX PP Availability During A2R17 With 0SX115B Closed; Dated April 17, 2014
- IR 1655885; OSP-A 2RH01SA Failed Initial Leak Test; Dated May 5, 2014
- IR 1656188; OSP-A 2RH01SA Failed Initial Leak Test; Dated May 5, 2014
- IR 1656328; OSP-X 2SX68AA-1.5” Does Not Meet 87.5 Percent Screening Criteria; Dated May 6, 2014
- IR 1659136; Pinhole Upstream of 1AF017A; Dated May 12, 2014

- IR 1659718; Scope Expansion Inspection of 1SX25AA-6; Dated May 14, 2014
- IR 1668352; 1SX25AA-6" (Leakage Observation and NDFE Results/Clamp Off); Dated June 5, 2014
- IR 2413339; 1SX057B Discharge Flange Erosion & Pitting; Dated November 17, 2014
- IR 2517120; RCS Cooldown Calc Not Aligned with CC HX Calc; Dated June 19, 2015
- IR 2557610; 1SX002A is Not fully Seated (IST Valve); Dated September 19, 2015
- IR 2571547; 2A RH Pump Outside of Acceptance Criteria; Dated October 15, 2015
- IR 2575398; Leak From CAP Downstream of Valve 2RH029A (Cleaned); Dated October 22, 2015
- IR 2588892; Ripped/Torn Insulation on Line 2SX37AA-2; Dated November 18, 2015
- IR 2589376; Fitness for Service Evaluation of Horizontal Pipe 2SX93BB-8; Dated October 9, 2015
- OP-AA-101-113-1004; 0SXH2AA-6, Had General Corrosion; Dated November 19, 2015
- Braidwood 12th Maintenance rule Periodic (a)(3) Assessment #12; Dated May 2013 – October 2014

1R13 Maintenance Risk Assessments and Emergent Work Control

- IR 2506342; 1ES022, Found Failed Open; Dated May 27, 2015
- IR 2506791; Packing Leak on 1ES004 MOV; Dated May 28, 2015
- IR 2567811; OSP-A 2RH606, Mechanically Bound; Dated October 8, 2015
- IR 2572655; 2RH606, Would Not Fully Open; Dated October 17, 2015
- IR 2577362; PI-AA-125, Not Followed for SPC Assignment; Dated October 27, 2015
- IR 2577375; PI-AA-120 Issue; Dated October 27, 2015
- IR 2596104; 1B MFP, Manual Trip; Dated December 4, 2015
- IR 2596283; 4.0 Critique for 1B MFP Manual Trip; Dated December 4, 2015
- ER-AA-600-1043; Shutdown Risk Management; Revision 6
- OP-AA-101-113-1004; 1B TDFWP Discharge Flow High Alarm; Dated December 4, 2015
- PI-AA-120; Issue Identification and Screening Process; Revision 3
- PI-AA-125; Corrective Action Program Procedure; Revision 2

1R15 Operability Evaluations

- IR 2587029; Need OP Procedure – Fill AF Day Tank from EDG DO Storage Tank; Dated November 13, 2015
- IR 2590638; 0SX165A/B – DG Modeling Update in Paragon; Dated November 21, 2015
- IR 2589930; Heavy General Corrosion on 0SXH2AA 6: in 0SX165A PIT; Dated November 19, 2015
- BwAR 1.3-D6; AF Pump DO Day Tank Level Low; Revision 5E4
- BwOP CC-14; Post LOCA Alignment of the CC System; Revision 15
- 1BwEP ES-0.2; Natural Circulation Cooldown; Revision 203 WOG 2
- CC-AA-309-1001; Useable Volume in Diesel Oil Storage Tanks and Day Tanks; Dated September 30, 2010
- CC-AA-309-1001; MUR Cooldown; Dated October 21, 2010
- EC 403340; Op Eval 15-006, Excessive Leakage Through 1SX002A; Dated September 25, 2015
- OP-Eval # 15-005; IR 2517129 – RCS Cooldown Calculation Not Aligned with CC HX Calculation; Revision 0
- BRW-10-0146-M/BYR10-103; AF Diesel Driven Pump Fuel Consumption and Day Tank Requirements; Dated February 26, 2015
- BRW-97-1072-M; Braidwood CCWS Equipment Re-Evaluation; Dated August 16, 2013

1R18 Plant Modifications

- 1BwOSR 5.5.8 RH-3A; Residual Heat Removal System Train A Valve Stroke Surveillance; Revision 7
- CC-AA-309-1001; Design Analysis 034514, Addendum to Analysis of Buried Essential Service Water Piping at Braidwood Station; Dated December 8, 2015
- CC-AA-501-1013; Exelon Nuclear Welding Program Water Backed and Wetted Surface Welding Guideline; Revision 3
- EC 499433; Westinghouse Ovation Digital Upgrade to Rod Control Logic Cabinet; Revision 000
- 50.59 Review Coversheet Form - EC 400433 and EC 400435/DRP 16-023 and DRP 16-035; Westinghouse Ovation Digital Upgrade to Rod Control Logic Cabinet (N-1 Outage)
- WNA-PD-00421-GEN; Operating Plant Automation and Engineering Products Control and Monitoring System Projects – Software Quality Assurance Plan; Revision A; Dated June 2015
- IEEE Standard for Software Verifications and Validation; Dated June 8, 2005 and May 25, 2012
- NRC RIS 2002-22; Use of EPRI/NEI Joint Task Force Report, "Guideline on Licensing Digital Upgrades: EPRI TR-102348; Revision 1; NEI 01-01: A Revision of EPRI TR-102348 to Reflect Changes to the 10 CFR 50.59 Rule"; Dated November 25, 2002
- Braidwood NSSS Control System Modernization; Site PHC Presentation – Phase 2/3 Request; Dated September 25, 2014
- NEI Letter to NRC; Guideline on Licensing Digital Upgrades; Dated March 15, 2002
- ComEd Letter to NRC; Application for Amendment to Facility; Dated December 22, 1992
- WO 01862900 01; IST-STT-1RH610/1SI8812A-U1 Train A RH System Valves; Dated December 10, 2015
- WO 01879786 01; MM Install Hot Tap on LNE 0SX03CA-48" EC 403997
- WO 01879786 06; Perform Hot Tap on Line 0SX03DA-48" (24" Blind Flange)
- WO 01880188 01; Cut Pipe/Valve Assembly and Weld Cap on 0SXH2AA-6" EC 403997
- WO 01880188 05; Cut Pipe/Valve Assembly and Weld Cap on 0SXH2AA-6" EC 403997
- WO 01881076 01; MM FAV/INST 16" Pipe Enclosure Over LNE 0SXH2AA-6" EC403997
- TDW Services, Inc. Nuclear Site Procedure; Suggested Field Service Methods for Hot Tapping and Stopple Pipe Plugging; Dated December 1, 2015
- TDW Functional Leak Testing; WHR/SERV-III-I; Dated January 30, 2009
- MA-AA-716-021; Rigger's Checklist; Revision 26
- Drawing ND 48859-11; 48" Wafer Sphere Valve 150# ANSI Flangeless w/Limitorque Electric Act.; Dated November 29, 1976
- Drawing ESW-213; Large Bore Isometric; Dated September 19, 1985

1R19 Post Maintenance Testing

- IR 2570652; 2FP010 Failed PMT; Dated October 14, 2015
- IR 2572704; OSP-A-LLRT Failure for 2CC9486; Dated October 16, 2015
- 2BwOSR 3.6.1.1-12; Primary Containment Type C Local Leakage Rage Test of Component Cooling System; Revision 12
- 2BwOSR 3.6.3.5.FP-1; Fire Protection Containment Isolation Valve Stroke Surveillance; Revision 3
- 2BwOSR 5.5.8 FP-2; Fire Protection Containment Isolation Valve Indication Surveillance; Revision 2
- WO 01611951 01; IST-LT-U2 CC 9486/9413A P25 RCP Motor/Therm Bar Sup; Dated October 16, 2015

- WO 01611951 04; IST-LT-U2 CC 9486/9413A P25 RCP Motor/Therm Bar Sup; Dated October 17, 2015
- WO 01723328 04; 2FSV-FP010 Replacement Solenoid Valve; Dated October 14, 2015
- WO 01751593 07; M4-2SX143B Unable to Isolate 2B SX PP for Maintenance Window; Dated October 13, 2015

1R20 Refueling and Other Outage Activities

- IR 2565486; OSP-A FWP Manually Tripped on High Bearing Temperature; Dated October 5, 2015
- IR 2565513; Auxiliary Feedwater Auto-Start on LO-2 SGWL; Dated October 5, 2015
- IR 2565514; OSP-A Minor Leak on Steam Generator Snubber Reservoir Tubing 2RC01BA-A; Dated October 5, 2015
- IR 2565538; OSP-A U2 Containment Emergency Hatch Not Operating Properly; Dated October 5, 2015
- IR 2565548; OSP-A Misc. Tags Found Inside Unit 2 Containment by NRC; Dated October 5, 2015
- IR 2566239; 4.0 Critique U2 AF Actuation on 2C SG LO-2; Dated October 5, 2015
- IR 2567071; Exciter Stator Phase Banding is Loosening; Dated October 7, 20154
- IR 2571599; PT Exam: Indications found SG-B (2RC01BB) Channel Head; Dated October 15, 2015
- IR 2571742; Work Hour Waiver – RP ERO; Dated October 16, 2015
- IR 2571860; NRC Questions Regarding Containment Liner Plate; Dated October 15, 2015
- IR 2572655; 2RH606 Would Not Fully Open; Dated October 17, 2015
- IR 2572795; 4.0 Critique for Loss of DC 211/213 and 2BwOA ELEC-1 Entry; Dated October 17, 2015
- IR 2575474; Dry Boric Acid at the 2RC8001B Leak-Off Line; Dated October 22, 2015
- IR 2575961; 2FI-523A Not Indicating Flow; Dated October 23, 2015
- IR 2577362; PI-AA-125 Not Followed for SPC Assignment; Dated October 27, 2015
- IR 2577375; PI-AA-120 Issue; Dated October 27, 2015
- Apparent Cause Investigation Report; Feedwater Reliability to Support Unit Shutdown – IR 2565442; Dated November 25, 2015
- Apparent Cause Investigation Report; Operations Post Event Critique of AF Auto Start on 2C SG Low Level – IRs 2566239 and 2565513; Dated October 30, 2015
- 2BwOA SEC-1; Secondary Pump Trip; Revision 105
- BwOP AF-11; Filling Steam Generators Utilizing the Motor Driven Auxiliary Feedwater Pump A; Revision 20
- BwOP FW-1; Startup of a Turbine Driven Main Feedwater Pump; Revision 36
- BwOP FW-7; Startup of a Motor Driven Main Feedwater Pump; Revision 18
- BwVS 500-6; Low Power Physics Test Program; Revision 38
- OP-AA-101-111; Roles and Responsibilities of On-Shift Personnel; Revision 7
- BRW-S-2015-135; Braidwood Unit 2 Cycle 19 Core and Operation; Revision 0
- LS-AA-119; 10 CFR 26 Work Hour Limits Waiver; Revision 11
- LS-AA-119-1001; Fatigue Assessment; Revision 3
- WC-AA-120; Preventive Maintenance Data Base Revision Requirements; Revision 2
- Braidwood A2R18 Standards' Team Report; Dated October 6 and October 7, 2015
- Com Ed Letter to NRC; Response to GL 88-17 Loss of Decay Heat Removal; Dated December 30, 1988
- Com Ed Letter to NRC; NRC GL 88-17 October 17, 1988; January 11, 1989
- RG 1.33; Quality Assurance Program Requirements (Operation); Revision 2-February 1978

1R22 Surveillance Testing

- IR 2571547; 2A RH Pump Outside of Acceptance Criteria; Dated October 15, 2015
- IR 2594588; Rising Trend in 1BwOSR 3.6.3.6 LLRT; Dated December 2, 2015
- BwISR 3.1.4.3a; Rod Drop Time (Automatic); Revision 8
- 1BwOSR 3.6.3.6; Primary Containment Type C LLRTs of Containment Miniflow Purge Isolation Valves (VQ); Revision 9
- 2BwOSR 5.5.8.RH-6; Residual Heat Removal System Check Valve Stroke Test; Revision 7
- BwVS 500-6; Low Power Physics Test Program; Revision 38
- WO 01742467 01; Low Power Physics Test Program with Dynamic Rod Worth Measure; Dated October 23, 2015
- WO 01744674 01; Automatic Rod Drop Time Surveillance; Dated October 22, 2015
- WO 01756709 01; IST Co 2SI8841A/B & CO 2SI1894A/C – U2 RH Hot Leg; Dated October 9, 2015
- WO 01841264 01; IST-LT-1VQ003/004/A/B-PRI Containment, Type C LLRT of Containment. Miniflow; Dated December 2, 2015
- WO 01862900 01; IST-STT-1RH610/1SI8812A-U1 Train A RH System Valve; Dated December 10, 2015

1EP4 Emergency Action Level and Emergency Plan Changes

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revisions 24 and 25
- EP-AA-1001; Addendum 3, Emergency Action Levels for Braidwood Station; Revision 0
- EP-AA-1001; Radiological Emergency Plan Annex for Braidwood Station; Revisions 32 and 33
- EP-AA-120-1001; 10 CFR 50.54(q) Change Evaluation; Revision 7
- EP-AA-120-F-01; EP Document Approval Form; Revision J

1EP6 Drill Evaluation

- Drill Package dated November 12, 2015

2RS1 Radiological Hazard Assessment and Exposure Controls

- RWP-10017293; A2R18 Radiography on Fukushima Flex Mod. Piping in the Auxiliary Building
- RWP-10017333; A2R18 Reactor Cavity Decontamination with Added Controls
- RWP-10017801; A2R18 SG Bowl Drain Replacement Project
- RWP-10017322; A2R18 Reactor Head Disassembly and Reassembly
- OU-AA-390; Spent Fuel Pool Material Control; Revision 3
- OU-AA-390-1000; Spent Fuel Pool Inventory Consolidations and/or Clean-out Campaigns; Revision 0
- OU-AA-390 Attachment 1; Spent Fuel Pool Material Log
- RP-AA-800-001; National Source Tracking Program (NSTS); 2015 Annual Inventory Reconciliation
- NSTS; Confirmation Form for 2015 Annual Inventory Reconciliation; NSTS Fax; Resources@NRC.gov
- RP-AA-800; Semi Annual Inventory and Leak Test; Dated June 2015
- IR-2566172; A2R18 Forced Oxidation Co-58 Peak Higher than Predicted; Dated October 5, 2015
- IR-2566173; A2R18 Level 1 Personnel Contamination Event (PCE); on a CB&I Electrician; Dated October 5, 2015

- IR-2566767; A2R18 Behavior Specialist Observations and Coaching During the Outage; Dated October 6, 2015
- IR-2566807; Level 1 PCE on a Master Lee Contractor during Seal Table Work Activity; Dated October 6, 2015
- IR-2566852; Level 1 PCE on CB&I Reactor Cavity Work; Dated October 7, 2015
- IR-2568841; Contaminated Area Found in the Clean Area of MMD Hot Shop; Dated October 10, 2015
- IR-2570222; PCE Level 1 on Work Group on Mechanic and Maintenance Department; Dated October 13, 2015

2RS2 Occupational ALARA Planning and Controls

- RWP-10017293; ALARA Plan for A2R18 Radiography on Fukushima Flex Mod. Piping in the Auxiliary Building; Revision 0
- RWP-10017333; ALARA Plan for A2R18 Reactor Cavity Decontamination with Added Controls; Revision 0
- RWP-10017801; ALARA Plan for A2R18 SG Bowl Drain Replacement Project; Revision 0
- RWP-10017322; ALARA Plan for A2R18 Reactor Head Disassembly and Reassembly; Revision 0
- RWP-10017332; ALARA Plan for A2R18 Reactor Cavity Decontamination with no Entry into the Reactor Cavity; Revision 0
- IR-2565655; RWP Not Assigned to Defeat 2PC103M Interlocks; October 5, 2015
- IR-2567130; A2R18; Critical Path Delay for Co-58 Cleanup, Containment Delay; Dated October 7, 2015
- IR-2569831; Level 2 PCE on a Bartlett Personnel; Dated October 12, 2015
- IR-2571283; PCEs and Scheduled were Affected by Lack of Labor Support; Dated October 15, 2015

4OA1 Performance Indicator Verification

- IR 2501820; Through Wall Leak Downstream 1SX007; Dated May 17, 2015
- IR 2503986; Buried Pipe Raw Water Corrosion Program Health is Yellow; Dated May 20, 2015
- IR 2571481; Hot Work Fire Reported at the 2A CW Box Outlet Side; Dated October 15, 2015
- IR 2571515; Fire Marshal ID'd Incomplete Hot Work Permit; Dated October 15, 2015
- IR 2571537; Fire Marshal ID'd Negative Trend in Hot Work Compliance; Dated October 15, 2015
- IR 2571547; 2A RH Pump Outside of Acceptance Criteria; Dated October 15, 2015
- IR 2571704; LLRT Failure for 2CC9486; Dated October 16, 2015
- 3rd Quarter 2015 Performance Indicators; Reactor Coolant System Leakage; Dated October 13 - September 14

4OA2 Problem Identification and Resolution

- IR 2503008; Interim Part 21 Report – STAAD Software Errors; Dated May 19, 2015
- IR 2565488; Feedwater Dissolved Oxygen Above Action Required Limit; Dated October 5, 2015
- IR 2565538; OSP-A U2 Containment Emergency Hatch Not Operating Properly; Dated October 5, 2015
- IR 2571015; OSP-A 2SI8888 Stuck Open; Dated October 15, 2015
- IR 2571145; Potential Safety Issue – Waste Dumpster Usage; Dated October 15, 2015

- IR 2571151; Relief Valve Failure During Testing; Dated October 14, 2015
- IR 2571277; OSP Emergent Modification Required for SX Support(s); Dated October 14, 2015
- IR 2571340; A2R18 ISI Examination Results; Dated October 15, 2015
- IR 2571547; 2A RH Pump Outside of Acceptance Criteria; Dated October 15, 2015
- IR 2572599; PT Exam: Indications Found SG-B (2RC01BB) Channel Head; Dated October 15, 2015
- IR 2571602; 1TE-FW003D Leaks Oil at Threaded connections; Dated October 13, 2015
- IR 2571659; CCP – Laundry Bag Bumps Against a Valve; Dated October 14, 2015
- IR 2547406; 4.0 Critique for Leak on 2A SX Strainer Backwash Line; Dated August 26, 2015
- IR 2571015; OSP-A SI8888 Stuck Open; Dated October 15, 2015
- IR 2571145; Potential Safety Issue – Waste Dumpster Usage; Dated October 15, 2015
- IR 2571151; Relief Valve Failure During Testing; Dated October 14, 2015
- IR 2571277; OSP Emergent Modification Required for SX Support(s); Dated October 14, 2015
- IR 2571340; A2R18 ISI Examination Results; Dated October 15, 2015
- IR 2571602; 1TE-FW003D Leaks Oil at Threaded Connections; Dated October 13, 2015
- IR 2571860; NRC Questions Regarding Containment Liner Plate; Dated October 15, 2015
- IR 2572013; 0BwOS FX-1A Condition H, U1 Applicability; Dated October 16, 2015
- IR 2572015; Concerns with Laundry Service Quality; Dated October 16, 2015
- IR 2572182; A2R18 PCE Level 3 Log #15-030 EMD MCC Testing; Dated October 16, 2015
- IR 2572264; A2R18 PCE Level 1 Log #15-029 (Ops 2A/B RH Pump Activities); Dated October 15, 2015
- IR 2572274; Safety Maintenance Repairs to Unleaded and Diesel Fuel Tanks; Dated October 16, 2015
- IR 2572342; A2R18 PCE Level 1 Log #15-031 (CB&I Painter); Dated October 16, 2015
- IR 2572392; Unexpected High Gas Alarm on UAT 141-2; Dated October 17, 2015
- IR 2572460; A2R18 PCE Level 1 Log #15-032 Rolls Royce/RXS/Electrician; Dated October 17, 2015
- IR 2572490; OSP-X 2R & 8026 Valve Stroke Time Exceeded Alert Limit; Dated October 17, 2015
- IR 2572491; 2BwOA ELEC-1 Entry Due to Loss of DC Bus 211/213; Dated October 17, 2015
- IR 2572495; FME Identified and Removed from 2A CD Pump Suction Strainer; Dated October 17, 2015
- IR 2572504; Ref. IR 2566878 (Leak Getting Worse) Unable to Quantify; Dated October 17, 2015
- IR 2572537; 345KV BT 7-11 Bus 7 Mod Required Several Attempts to Close; Dated October 17, 2015
- IR 2572557; A2R18LL – Schedule Change for 2A DV Pump Unavailability; Dated October 17, 2015
- IR 2572618; RCDT Overflows and Backs up in Seal Leak Off Lines; Dated October 18, 2015
- IR 2572655; 2RH606 Would Not Fully Open; Dated October 17, 2015
- IR 2572669; Contingency WO Needed for Thermal OVLD Replacement U1 PORV; Dated October 18, 2015
- IR 2572702; A2R18 PCE Level 1 Log #15-033 RP Laborers Cavity Decon; Dated October 18, 2015
- IR 2572704; A2R18 PCE Level 1 Log #15-035 RXS BM Cavity Work Support; Dated October 18, 2015
- IR 2572743; Graffiti in 2AD MSIV Room 377; Dated October 18, 2015
- IR 2572747; A2R18LL – Protect Reactor Cavity Vent Fans From Work Above; Dated October 18, 2015

- IR 2572749; OSP 2RY456 Failed Open Stroke Timing; Dated October 18, 2015
- IR 2572752; A2R18 Circ. Water Not Returned to Service Within 24 Hours; Dated October 18, 2015
- IR 2572767; Issues with Benchmark Report 2509548; Dated October 18, 2015
- IR 2572772; Leak from ECCS Vent Barrel; Dated October 14, 2015
- IR 2572779; Unexpected Annunciator 0-37-B4; Dated October 18, 2015
- IR 2572783; Level 1 PCE; Dated October 18, 2015
- IR 2572796; 4.0 Critique for Loss of DC 211/213 and 2BwOA ELEC-1 Entry; Dated October 17, 2015
- IR 2572826; Level 1 PCE; Dated October 18, 2015
- IR 2572840; 2A AF Suction Mod Test Per EC 392819 – Unexpected Results; Dated October 18, 2015
- IR 2572842; OSP 2RC014A Will Not Indicate Closed; Dated October 19, 2015
- IR 2572853; OSP Crack Found on EH Isolation Valve to MS5002A; Dated October 19, 2015

IR 2573801; NRC Resident Found an Unsecured Nitrogen Dewar in the TB; Dated October 20, 2015

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
BMV	Bare Metal Visual Examination
CCDP	Conditional Core Damage Probability
ΔCCDP	Delta Conditional Core Damage Probability
ΔCDF	Delta Core Damage Frequency
CFR	*Code of Federal Regulations*
CIV	Containment Isolation Valve
FLEX	Diverse and Flexible Coping Strategies
FW	Feedwater
IEF	Initiating Event Frequency
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
ISI	Inservice Inspection
kV	Kilovolt
LCO	Limiting Condition for Operation
MDFWP	Motor Driven Feedwater Pump
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OSP	Outage Safety Plan
OWA	Operator Workaround
PARS	Publicly Available Records System
PI	Performance Indicator
RC	Reactor Coolant
RCS	Reactor Coolant system
RFO	Refueling Outage
RG	Regulatory Guide
RHR	Residual Heat Removal
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 Test
VT	Visual Examination
WO	Work Order

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Sincerely,

/RA/

John Jandovitz, Acting Chief
Branch 3
Division of Reactor Projects

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