



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

August 13, 2008

Mr. Charles G. Pardee
Chief Nuclear Officer and
Senior Vice President
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2 NRC INTEGRATED INSPECTION
REPORT 05000456/2008003; 05000457/2008003**

Dear Mr. Pardee:

On June 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Braidwood Station, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on July 9, 2008, with Mr. B. Hanson and other members of your staff.

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

Based on the results of this inspection, four NRC-identified findings of very low safety significance (Green) were identified. The findings were also 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 the issues as a Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

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

C. Pardee

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Sincerely,

/RA/

Richard A. Skokowski, Chief
Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000456/2008003; 05000457/2008003
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Braidwood Station
Plant Manager - Braidwood Station
Regulatory Assurance Manager - Braidwood Station
Chief Operating Officer and Senior Vice President
Senior Vice President - Midwest Operations
Senior Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director - Licensing and Regulatory Affairs
Manager Licensing - Braidwood, Byron and LaSalle
Associate General Counsel
Document Control Desk - Licensing
Assistant Attorney General
J. Klinger, State Liaison Officer,
Illinois Emergency Management Agency
Chairman, Illinois Commerce Commission

C. Pardee

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SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2 NRC INTEGRATED INSPECTION
REPORT 05000456/2008003; 05000457/2008003

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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: 05000456/2008003 and 05000457/2008003

Licensee: Exelon Generation Company, LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, Illinois

Dates: April 1 through June 30, 2008

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B. Dickson, Senior Resident Inspector
G. Roach, Senior Resident Inspector (Acting)
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Approved by: R. Skokowski, Chief
Branch 3
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000456/2008003, 05000457/2008003; 04/01/2008 – 06/30/2008; Braidwood Station, Units 1 & 2; Adverse Weather Protection, Flooding, Radioactive Material Processing and Transportation, and Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a performance deficiency involving a NCV of Technical Specifications 5.4.1, related to the unauthorized and improper storage of loose material in the designated material exclusion area around the Unit 1 and Unit 2 transformers. The inspectors identified this issue on a number of occasions. After each occurrence, the licensee took immediate corrective actions by either removing loose material out of the transformer yard or properly securing the material being stored in the transformer yards.

The inspectors concluded that the finding was more than minor because loose/unsecured material in the transformer yards increased the likelihood of those events occurring that could upset plant stability. Specifically, during high wind speed conditions the loose material could have affected the main power transformers and could have caused a unit trip or it could have affected the station auxiliary transformers that could increase the likelihood of a loss of mitigating systems. In each case however, the inspectors concluded that there was not enough debris in either area to affect both transformers simultaneously. The finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be available. The primary cause of this NCV was related to the cross-cutting aspect in the area of Human Performance in the Work Practices component (Item H.4.(b)). Multiple groups, including contractors and operators failed to properly implement the procedures for control of material in the transformer exclusion zones. The preliminary cause appeared to be inadequate supervisory and management oversight of work activities. (Section 1R01.2)

- Green. The inspectors identified a performance deficiency involving a NCV of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," related to a plant barrier impairment (PBI) procedure. The procedure for PBI did not contain steps to ensure that relied-upon compensatory measures were maintained. Specifically, while the B Train room of essential service water had a flood barrier removed and covered under a PBI, the compensatory measure of sump alarms were found not functioning. The licensee has

entered the issue into their corrective action program, repaired the sump alarms, and plans to revise the PBI procedure.

The inspectors concluded that the finding was greater than minor because the licensee failed to effectively manage prescribed compensatory measures related to a cornerstone objective. The finding was determined to be of very low safety significance based on a SDP Phase 1 screening in accordance with IMC 0609, Table 4a, because the finding did not increase the likelihood of an external or internal flood. The primary cause of this NCV was related to the cross-cutting component of Human Performance for Resources (Item H.2.(c)) because the licensee's PBI procedure was not adequate in that it did not ensure safety margins were maintained by providing instructions to periodically verify that the compensatory measures were still available. (Section 1R06)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a performance deficiency involving a NCV of Technical Specifications 5.4.1, for the licensee's failure to provide procedural controls for the unique identification of Regulatory Guide 1.97 post-accident instrumentation to aid the control room operator. Specifically, the licensee failed to adequately control the labeling on both units' control panels and the simulator, resulting in several improperly marked post-accident indicators. The licensee has entered the issue into their corrective action program and labeled the appropriate post-accident instruments.

The finding was greater than minor because, if left uncorrected, it could become a more significant safety concern. Inaccurately labeled control room indicators of post-accident instrumentation could lead to confusion and hamper operator response if conflicting indications resulted due to accident conditions. The finding was determined to be of very low safety significance based on a SDP Phase 1 screening in accordance with IMC 0609.04, "Initial Screening and Characterization of Findings." The inspectors did not identify a cross-cutting aspect to this finding. (Section 4OA5.3)

Cornerstone: Public Radiation Safety

- Green. A finding of very low safety significance and associated NCV of the Technical Requirements Manual, Appendix L, and Technical Specifications 5.4.1(a) were identified by the inspectors. On May 1, 2008, the inspectors identified that the licensee had failed to sample the temporary wastewater storage tanks installed to hold shower and wash water from the Unit 2 Containment Access Facility at the required frequency of seven days. Procedure RP-BR-654, "Unit 1(2) Containment Access Facility Liquid and Air Sampling and Disposal Requirements, Revision 0," as written, did not direct the required sampling frequency. The licensee took immediate corrective action by sampling the temporary storage tank, revising the scheduling tool to ensure that the tanks are sampled at least every seven days when radioactive material is being added to the tank, and planning to revise the sampling procedure.

The finding involved an occurrence in the licensee's radioactive material control program that is contrary to the licensee's procedures. The finding was more than minor because it impacted the program and process attribute of the Public Radiation Safety Cornerstone and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive material release into the public domain, in that the failure to measure the levels of radioactivity in the temporary storage

tanks had the potential to impact the licensee's effluent program. The inspectors applied the IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process" to this finding. The finding is in the licensee's radiological effluent monitoring program. The finding did not involve a failure to implement the effluent release program nor did public dose exceed Appendix I, Criterion, or 10 CFR 20.1302(e) and the finding was determined to be of very low safety significance. The primary cause of this NCV was related to the cross-cutting component of Human Performance for Work Practices (Item H.4.(c)) because the licensee did not ensure that supervisory and management oversight of the procedure was adequate to assure nuclear safety. (Section 2PS2.1)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

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

Unit 2 operated at or near full power until about April 15, 2008, when a gradual power coast down was started toward a refueling outage. The unit was brought from 95 percent of full power to 80 percent on April 17 for main steam relief valve testing and then back to 92 percent of full power on April 18. The unit continued to coast down until being shutdown from 90 percent power on April 20, 2008, for the refueling. The unit was made critical at the end of the outage on May 16, 2008, the generator was placed on line on May 17, 2008, and the power was gradually increased, reaching full power on May 25, 2008. The unit operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Summer Readiness of Offsite and Alternating Current Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events;
- explanations for the events;
- estimates of when the offsite power system would be returned to a normal state; and
- notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- the actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;

- the compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- a re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- the communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed were listed in the Attachment. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Readiness for Summer Seasonal Extreme Weather Conditions

a. Inspection Scope

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

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. The inspectors also reviewed 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 were listed in the Attachment. The inspectors' reviews focused specifically on the following plant systems:

- cooling water lake (ultimate heat sink);
- transformer yard; and
- turbine oil system.

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

b. Findings

Introduction: The inspectors identified a Non-Cited Violation (NCV) of Technical Specifications (TS) 5.4.1.a having very low safety significance (Green) for unauthorized

and improper storage of unsecured material in the designated material exclusion area around the Units 1 and 2 transformers.

Description: On April 30, 2008, the inspectors identified three metal scaffold poles and a large floor rug in the exclusion area of the Unit 1 transformer yard. The inspectors notified the shift manager who immediately had the material removed and entered the issue into the CAP as Issue Report (IR) 770357. The Shift Manager indicated that he had not given permission, as required by Procedure MA-AA-716-026, "Station Housekeeping/Material Condition Program," for the material to be in the exclusion area.

On May 22, 2008, the inspectors identified four metal stanchions and associated garden hoses staged, two each, in the Units 1 and 2 transformer yards. The material had been staged as a contingency for providing supplemental cooling to the main power transformers as a summer readiness action, but the material was not secured. Although the staging had the permission of the Shift Manager, it was not done in accordance with the applicable Procedure, BwOP MP-26, "Supplemental Main Power Transformer Cooling," which required that all hoses in the transformer area be properly secured to prevent the hoses from becoming wind-generated hazards that may cause a loss of offsite power. The inspectors notified the Work Execution Center Supervisor who immediately had the material properly secured with sandbags and entered the issue into the CAP as IR 778589.

On May 28, 2008, the Illinois Department of Emergency Management (IEMA) inspector identified a metal stanchion with a radiation warning sign in the Unit 2 transformer yard. The sign had apparently been removed from the turbine building during floor refinishing and placed in the transformer yard without the permission of the Shift Manager as required by Procedure MA-AA-716-026. The IEMA inspector notified the Work Execution Center Supervisor who immediately had the material removed and entered the issue into the CAP as IR 780318.

On May 29, 2008, the inspectors identified two pieces of a metal door threshold in the exclusion area of the Unit 2 transformers. The material was brought to the attention of an operations supervisor who immediately removed the material and entered the issue into the CAP as IR 780777. The inspectors noted that this instance, as well as some of the previously mentioned ones, was probably the result of contractors working on turbine building floor refinishing, and clearing material off the floor by putting it through the turbine building door into the exclusion area. The inspectors noted that there were multiple information signs explaining the exclusion area rules on most of the entry paths into the exclusion areas except that there were no signs on the doors from the turbine building directly into the areas. This observation was also entered into the licensee's CAP as part of IR 780777.

Analysis: The inspectors determined that the identification of multiple examples of improperly placing unsecured material in the transformer yard exclusion zones was a performance deficiency warranting a significance evaluation. The finding was more than minor because it involved the external factors attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that could upset plant stability. The inspectors applied the Phase 1 Screening Worksheet of the Significance Determination Process (SDP) and determined that the issue screened out as a Green finding because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigating equipment or functions would not be

available. The material in the transformer yards could have affected the main power transformers and caused a unit trip, or it could have affected the station auxiliary transformers and increased the likelihood of a loss of mitigating systems, but it was not reasonable that it was enough material to affect both simultaneously. The finding had a cross-cutting aspect in the area of Human Performance in the Work Practices component (H.4.(b)). Multiple groups, including contractors and operators failed to properly implement the procedures for control of material in the transformer exclusion zones. The preliminary cause appeared to be inadequate supervisory and management oversight of work activities.

Enforcement: Technical Specification 5.4.1.a stated that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, February 1978. Section 1.c of Appendix A recommended procedures for equipment control. Among the procedures the licensee used to implement that requirement were MA-AA-716-026 and BwOP MP-26. Under the "Storage Practices" section of Attachment 1 of MA-AA-716-026 were requirements that no material be brought into or stored inside the exclusion zone areas unless prior permission is received from the Shift Manager, that material shall be secured in the exclusion zone to prevent damage in the event of adverse weather conditions, and that unsecured scaffold parts must be secured in a manner that will prevent them from becoming missile hazards in the event of severe weather. For the supplemental cooling equipment, BwOP MP-26 contained Precaution D.3, which required that all hoses in the transformer area must be properly secured to prevent the hoses from becoming wind-generated hazards that may cause loss of offsite power, and Step F.7, which directed the operators to secure the hoses that will be used to provide cooling to the main power transformers. Contrary to the above, on three occasions during the inspection period, the inspectors identified unsecured material in the transformer exclusion areas that were placed in the areas without the Shift Manager's approval or were not properly secured. Because the failure to properly implement the material control procedures was of very low safety significance, and has been entered into the licensee's CAP, this violation was treated as an NCV consistent with Section VI.A.1, of the NRC Enforcement Policy. (NCV 05000456/2008003-01; 05000457/2008003-01)

.3 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On May 30, 2008, the plant experienced a tornado watch as well as high winds and thunderstorms in the area. The inspectors reviewed the preparations and actions of site personnel for protection of risk-significant equipment. The inspectors evaluated the implementation of the licensee's adverse weather procedures, risk assessment, and compensatory actions. No actual tornado occurred in the area during this time period. Documents reviewed were listed in the Attachment.

The inspection constitutes one readiness for impending adverse weather conditions sample as defined in IP 71111.01-05,

b. Findings

No findings of significance 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:

- 2B diesel generator (DG) while 2A DG was out of service for governor replacement;
- 1A DG while 2A DG was out of service for planned maintenance; and
- 1A auxiliary feedwater (AFW) train while the 1B train was out of service for troubleshooting and repair of the over speed trip circuit.

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;
- reviewed applicable operating procedures, system diagrams, UFSAR, TS requirements, Administrative TS, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions;
- walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable;
- examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies; and
- 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 were listed in the Attachment.

These activities constituted three partial system walkdown samples as defined by IP 71111.04-05.

b. Findings

No findings of significance 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:

- engineered safety features switchgear room, Division 11 (Zone 5.1-1);
- engineered safety features switchgear room, (Zone 5.2-1);
- station auxiliary DG room and diesel oil tank room (Zones 8.7A-0 and 8.7B-0);
- auxiliary building elevation 426 (Zone 11.6-0); and
- compensatory actions for loss of various Appendix R light packs during Bus 234V outage.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program (FPP) 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
- had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.

The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within 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 five quarterly fire protection inspection samples as defined by IP71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

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:

- Essential service water (SX) pump rooms.

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;
- flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments;
- 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; and
- the licensee's CAP documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions.

The specific documents reviewed were listed in the Attachment to this report.

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

b. Findings

Introduction: The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion V, having very low significance (Green) related to a plant barrier impairment (PBI) procedure. Specifically, the procedure did not contain steps to ensure that compensatory measures in the B Train room of SX were maintained, while required access covers were removed.

Description: The SX was a safety related system needed to remove decay heat in the event of an accident. The SX pumps were located in the lowest level of the Auxiliary Building. The system was designed to prevent failure from flooding by separation of components and by designing flood barriers in the doors, walls and ceiling. In order to maintain access to equipment in the room, several removable access covers existed. When installed, those access covers were designed to prevent flooding from system failures in the areas above the SX pump rooms from leaking into the room. With the covers removed, sump leak detection and high level alarms were depended upon to warn operators should a leak from above the room occur.

When the access covers were removed, several compensatory measures were directed to be put in place in accordance with Procedure BwAP 1110-3, "Plant Barrier Impairment Program." The compensatory measures were pre-evaluated for each cover.

On April 2, 2008, PBI 10586 was authorized to remove equipment cover 2SXFSO2-3. This hatch had a pre-defined compensatory action to ensure that the room sump alarms were available. On April 7, 2008, while the PBI was still in effect, operators determined that the room sump alarms were not functioning. This was documented in the licensee's CAP as IR 760446. Work Order (WO) 103501 was initiated to repair the alarm function. The WO was completed on April 21. The covers remained removed and the PBI in effect until after the WO was completed, thus the warning for flooding from sources above the SX pump room was known to be unavailable for up to fifteen days while an access cover was removed.

Analysis: The inspectors determined that the failure to ensure the compensatory measures remained viable was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," because the licensee failed to effectively manage prescribed compensatory measures related to a cornerstone objective.

The increase in flooding hazard affected the protection against external factors attribute of the Initiating Events cornerstone. Using the SDP Phase 1 Screening Worksheet of IMC 0609, Table 4a, the inspectors determined the finding screened as Green because the finding did not increase the likelihood of an external or internal flood.

The finding was related to the cross-cutting area of Human Performance. This finding was associated with the cross-cutting aspect of Resources (H.2.(c)) because the barrier impairment procedure was not adequate because it did not ensure safety margins were maintained by providing instructions to periodically verify that the compensatory measures were still available.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, required, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances. Contrary to the above, BwAP 1110-3 was not adequate because it did not ensure that the sump flooding alarms remained operational while the flood barrier covers are removed. Once identified, the licensee entered the finding into their CAP as IR 766773, "PBI Compensatory Actions Changed, Not Identified by Shift." Because the finding was of very low safety significance, and has been entered into the licensee's CAP, this violation was treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. Corrective actions included repairing the sump alarms and planned revision to the PBI procedure. (NCV 05000456/2008003-02; 05000457/2008003-02)

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

Annual Review

a. Inspection Scope

The inspectors reviewed the licensee's cleaning and eddy current (ET) testing of the Unit 2 component cooling heat exchanger to verify that potential deficiencies did not

mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. The inspectors also reviewed the licensee's calculation to justify continued operability of the heat exchanger with the additional tubes plugged as a result of these activities. Documents reviewed were listed in the Attachment.

This inspection constituted one sample of the annual requirement as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R08 In-service Inspection (ISI) Activities (71111.08)

For Unit 2, from April 28, 2008, through May 6, 2008, the inspectors conducted a review of the implementation of the licensee's ISI Program for monitoring degradation of the reactor coolant system (RCS), steam generator (SG) tubes, emergency feedwater systems, risk significant piping and components and containment systems.

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

.1 Piping Systems ISI

a. Inspection Scope

The inspectors observed the following nondestructive examinations (NDE) required by the American Society of Mechanical Engineers (ASME) Code, Section XI, to evaluate compliance with the ASME Code, Section XI and Section V requirements and if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement.

- ultrasonic examination (UT) of reactor vessel inlet nozzle-to-safe end weld (2RV-01-024) at the 113 degrees azimuth;
- UT of ultrasonic examination upper shell weld (2RV-01-004) and lower shell weld (2RV-02-001); and
- UT of safety injection system piping welds (1-SI-01-03 and 2SI-30-15).

The inspectors reviewed a record of the following NDE required by the ASME Code, Section XI to evaluate compliance with the ASME Code, Section XI and Section V requirements and if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement.

- Magnetic particle examination of SG feedwater nozzle weld (2SG-03-SGN-02).

The licensee did not identify surface or volumetric examinations completed during the previous outage with relevant/recordable conditions/indications accepted for continued service. Therefore, no NRC review was completed for this inspection attribute.

The inspectors observed fabrication of the following pressure boundary welds (overlay repairs) completed for pressure boundary risk significant systems during the current Unit 2 refueling outage. The inspectors also reviewed weld related documents to determine if the licensee applied the preservice NDE and acceptance criteria required by the construction Code, and an NRC approved Relief Request 12R-48. 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 the ASME Code, Section IX:

- weld overlay repair of the pressurizer safety "A," nozzle-to-safe end weld (2PZR-01-SE-02); and
- weld overlay repair of the pressurizer safety "C," nozzle-to-safe end weld (2PZR-01-SE-04).

b. Findings

No findings of significance were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the Unit 2 vessel head, no examination was required pursuant to NRC Order EA-03-009 and the licensee did not complete one during the current refueling outage. Therefore, no NRC review was completed for this IP attribute.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

The inspectors observed licensee boric acid corrosion control visual examinations for portions of the reactor coolant and/or emergency core cooling systems (ECCS) within containment to determine if these visual examinations emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following licensee evaluations of RCS components with boric acid deposits to determine if degraded components were documented in the corrective action system. The inspectors also evaluated corrective actions for any degraded RCS components to determine if they met the licensee's boric acid program procedures and the ASME Code, Section XI:

- reactor coolant pump 2B No. 1 seal flow element;
- reactor coolant loop 2A pump suction leg isolation valve; and
- 2B RCS loop drain isolation valve.

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 566386, boric acid leak 2RH01CA-16 bolted connection;
- IR 566370, boric acid leak 2RH01CB-16 flanged connection; and
- IR 543851, boric acid leak 2CV04AA inlet flange.

b. Findings

No findings of significance were identified.

.4 SG Tube Inspection Activities

a. Inspection Scope

The NRC inspectors observed acquisition of ET data, interviewed ET data analysts, and reviewed documentation related to the SG ISI program to determine if:

- in-situ SG tube pressure testing screening criteria used were consistent with those identified in the Electric Power Research Institute (EPRI) TR -1014983, "Steam Generator In-Situ Pressure Test Guidelines," and that these criteria were properly applied to screen degraded SG tubes for in-situ pressure testing;
- the numbers and sizes of SG tube flaws/degradation identified was bound by the licensee's previous outage Operational Assessment predictions;
- the SG tube ET examination scope and expansion criteria were sufficient to meet the TSs, and the EPRI 1003138, "Pressurized Water Reactor Steam Generator Examination Guidelines," Revision 6;
- the SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to these SG tubes;
- the licensee identified new tube degradation mechanisms and implemented adequate extent of condition inspection scope and repairs for the new tube degradation mechanism;
- the licensee implemented repair methods which were consistent with the repair processes allowed in the plant TS requirements and to determine if qualified depth sizing methods were applied to degraded tubes accepted for continued service;
- the licensee implemented an inappropriate "plug on detection" tube repair threshold (e.g., no attempt at sizing of flaws to confirm tube integrity);
- the licensee primary-to-secondary leakage (e.g., SG tube leakage) was below 3 gallons-per-day or the detection threshold during the previous operating cycle;
- the ET probes and equipment configurations used to acquire data from the SG tubes were qualified to detect the known/expected types of SG tube degradation in accordance with Appendix H, "Performance Demonstration for Eddy Current

Examination,” of EPRI 1003138, “Pressurized Water Reactor Steam Generator Examination Guidelines,” Revision 6;

- the licensee performed secondary side SG inspections for location and removal of foreign materials; and
- the licensee implemented repairs for SG tubes damaged by foreign material.

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

b. Findings

No findings of significance 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 50, Appendix B, Criterion XVI, “Corrective Action,” requirements. The corrective action documents reviewed by the inspectors were listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On May 27, 2008, the inspectors observed a crew of licensed operators in the plant’s simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew’s clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;

- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

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

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- service air.

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

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/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 were listed in the Attachment.

This inspection constituted one 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 work on the Unit 2 component cooling heat exchanger with emergent work on the 1A containment spray train;
- change from Mode 4 to Mode 3 with the 2B AFW pump unavailable;
- emergent troubleshooting on the 2E main power transformer cooling fan power transfer circuit;
- emergent work on 2A emergency DG; and
- Bus 242 outage during refueling outage.

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 were listed in the Attachment.

These activities constituted five samples as defined by IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- control room heating ventilation and air conditioning issues;

- Unit 2 containment integrity with equipment hatch removed during fuel movements;
- 1A DG after failure of 1SX169A to automatically open as expected during a monthly surveillance test;
- revision due to extended corrective action dates for AFW tunnel cover modifications; and
- 1A containment spray motor oil leak.

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

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

b. Findings

(Open) Unresolved Item (URI) 05000456/2008003-03; 05000457/2008003-03: AFW Tunnel Hatch Margin to Safety

The inspectors reviewed Operability Evaluation 07-007, Revision 2. This operability evaluation was performed because the licensee identified that the design analysis for evaluation of the AFW tunnel flood seal covers did not include the effects of a high energy line break in the main steam isolation valve tunnels. Following this review, the inspectors questioned why a dynamic load factor as a result of the impulse pressure following a high energy line break had not been considered in an analytic calculation perform to support the operability evaluation. The licensee documented the inspectors concerns in IR 783849.

Additionally, following a review of a subsequent revision of this operability evaluation, the inspectors questioned the licensee's conclusion that the operability of the AFW hatches continued to be supported despite analytical results showing a factor of safety for the concrete expansion anchors supporting the hatches of less than 2.0, which is contrary to the guidance provided in NRC Bulletin 79-02, "Pipe Support Base Plate Designs Using Concrete Expansion Anchors." Additionally, the inspectors noted that the operability evaluation did not address Section C.13 of NRC Technical Guidance 9900, "Operability Determinations & Functionality Assessment for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety." Specifically, Section C.13 stated that if a structure was degraded, the licensee should assess the structure's capability of performing its specified function. As long as the identified degradation did not result in exceeding acceptance limits specified in applicable design codes and

standards referenced in the design basis documents, the affected structure was either operable or functional.

At the close of the inspection period temporary modifications had been implemented at both units that restored the margin of safety to greater than 2.0. Pending additional follow-up by the inspectors for the timeliness of corrective actions, extent of condition, corrective actions and past operability, this item will remain open. (URI 005000456/2008003-03; 05000457/2008003-03) Included in the NRC review will be the licensees' evaluations of structural degradations to determine their technical adequacy and conformance to licensing and regulatory requirements.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- temporary modification on 1B AFW pump (substitution of automatic over speed trip function with manual operator actions to trip diesel on over speed); and
- main steam isolation valve tunnel blowout panel/AFW hatch temporary modification.

The inspectors compared the temporary configuration change and associated 10 CFR 50.59 screening and evaluation information against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors, as applicable, performed field verifications to ensure that the modification was installed as directed; the modification operated as expected; 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. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance.

This inspection constituted two samples as defined in IP71111.18-05.

b. Findings

No findings of significance 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:

- 2B DG following repairs to governor and lube oil pump;
- 2B SX pump following motor replacement;
- 2C heater drain pump after replacement and rework on shaft packing;
- 2B feedwater pump after work on the stop valve; and
- 1B AFW pump following troubleshooting of failure of the over speed trip.

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):

- the effect of testing on the plant had been adequately addressed;
- testing was adequate for the maintenance performed;
- acceptance criteria were clear and demonstrated operational readiness;
- test instrumentation was appropriate;
- tests were performed as written in accordance with properly reviewed and approved procedures;
- equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test documentation was properly evaluated.

The inspectors evaluated the activities against TS, 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 were listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Shutdown Safety Management Plan for the Unit 2 refueling outage, conducted April 20, 2008, to May 17, 2008, 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 refueling outage, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below. Documents reviewed during the inspection were listed in the Attachment to this report.

- Licensee configuration management, including maintenance of defense-in-depth commensurate with the safety plan for key safety functions and compliance with the applicable TS when taking equipment out of service.
- Implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing.
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error.
- Controls over the status and configuration of electrical systems to ensure that TS and safety plan 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 containment integrity as required by TS.
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage.
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown primary containment to verify that debris had not been left which could block ECCS suction strainers, and reactor physics testing.
- Licensee identification and resolution of problems related to refueling outage activities.

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

b. Findings

No findings of significance were identified.

.2 Review of Operating Experience Smart Sample Fiscal Year 2007-03, Revision 1, Crane and Heavy Lift Inspection, Supplemental Guidance for IP71111.20

a. Inspection Scope

The inspectors used the above referenced smart sample to review the reactor head lift procedures and load drop analysis to confirm that the procedures contained limitations which bounded the assumptions and conclusions of the load drop analysis. The inspectors also witnessed the actual head lift during the Unit 2 outage, using remote live video, to confirm that the procedures were followed correctly. These observations included pre-job briefs and relaying of instructions from the supervisor and crane signalman to the crane operator.

This inspection was part of the outage activities sample discussed in Section 1R20.1 above and did not constitute a separate sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Routine Surveillance Testing

a. Inspection Scope

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

- 1A monthly DG surveillance;
- 1B DG bypass of automatic trips; and
- 2B Residual Heat Removal (RHR) ASME surveillance.

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

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

Documents reviewed were listed in the Attachment.

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

b. Findings

No findings of significance were identified.

.2 Inservice Testing Surveillance

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:

- main steam safety valves operability test; and
- low flow feedwater isolation valve stroke test.

The inspectors observed activities and reviewed procedures and associated records to determine whether:

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

- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed were listed in the Attachment.

This inspection constituted two inservice testing samples as defined in IP 71111.22-05.

b. Findings

No findings of significance were identified.

.3 Containment Isolation Valve Testing

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

- Unit 1 containment emergency air lock hatch gasket interspaces.

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP. Documents reviewed were listed in the Attachment.

This inspection constituted one containment isolation valve inspection sample as defined in IP 71111.22-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators (PIs) for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors reviewed the licensee's occupational exposure control cornerstone PIs to determine whether the conditions resulting in any PI occurrences had been evaluated and whether identified problems had been entered into the CAP for resolution.

Documents reviewed were listed in the Attachment.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.2 Plant Walkdowns and Radiation Work Permit (RWP) Reviews

a. Inspection Scope

The inspectors reviewed licensee controls and surveys for the following radiologically significant work activities that were being conducted within radiation areas, high radiation areas, and airborne radioactivity areas in the plant to determine if radiological controls including surveys, postings, and barricades were acceptable:

- pressurizer weld overlay insulation shielding and support activities;
- pressurizer weld overlay project;
- SG ET testing and all tube repairs;
- reactor head component disassembly and reassembly; and
- split pin modifications.

The inspectors reviewed the RWPs and work packages used to access these areas and other high radiation work areas to identify the work control instructions and control barriers that had been specified. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify that they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed.

In addition, the inspectors walked down and surveyed (using an NRC survey meter) these areas to verify that:

- prescribed RWP, procedure, and engineering controls were in place;
- licensee surveys, and postings were complete and accurate; and
- air samplers were properly located.

The inspectors reviewed RWPs for airborne radioactivity areas to verify barrier integrity and engineering controls performance (e.g., high-efficiency particulate air ventilation system operation) and to determine if there was a potential for individual worker internal exposures of greater than 50 millirem committed effective dose equivalent.

Work areas having a history of, or the potential for, airborne transuranics were evaluated to verify that the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection.

The adequacy of the licensee's internal dose assessment process for internal exposures greater than 50 millirem committed effective dose equivalent was assessed. There were no internal exposures greater than 50 millirem committed effective dose equivalent.

Documents reviewed were listed in the Attachment.

This inspection constituted five samples as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed a sample of the licensee's self-assessments, audits, Licensee Event Reports (LERs), and Special Reports related to the access control program to verify that identified problems were entered into the CAP for resolution.

The inspectors reviewed corrective action reports related to access controls and high radiation area radiological incidents (issues that did not count as performance indicator occurrences identified by the licensee in high radiation areas less than 1R/hr). Staff members were interviewed and corrective action documents were reviewed to verify follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;

- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk significant operational experience feedback.

Documents reviewed were listed in the Attachment.

This inspection constituted two samples as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following three jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- pressurizer weld overlay project;
- SG ET testing and all tube repairs; and
- reactor head component disassembly and reassembly.

The inspectors reviewed radiological job requirements for these activities, including RWP requirements and work procedure requirements, and attended as-low-as-is-reasonably-achievable (ALARA) job briefings.

Job performance was observed with respect to these requirements to assess whether radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. The inspectors also evaluated the adequacy of radiological controls including required radiation, contamination, and airborne surveys for system breaches; radiation protection job coverage, including any applicable audio and visual surveillance for remote job coverage; and contamination controls.

Radiological work in high radiation work areas having significant dose rate gradients was reviewed to evaluate the application of dosimetry to effectively monitor exposure to personnel and to assess the adequacy of licensee controls. These work areas involved areas where the dose rate gradients were severe thereby increasing the necessity of providing multiple dosimeters or enhanced job controls.

Documents reviewed were listed in the Attachment.

This inspection constituted three samples as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.5 High Risk Significant, High Dose Rate, High Radiation Area and Very High Radiation Area Controls

a. Inspection Scope

The inspectors conducted plant walkdowns to assess the posting and locking of entrances to high dose rate, high radiation area and very high radiation area. Specifically, the inspectors reviewed the transient locked high radiation area and potentially very high radiation area controls during the core barrel lift.

Documents reviewed were listed in the Attachment.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.6 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the significant radiological conditions in their workplace, of the RWP controls and limits in place, and of the level of radiological hazards present. The inspectors also evaluated if worker performance accounted for these radiological hazards.

Documents reviewed were listed in the Attachment.

This inspection constituted one sample as defined in IP71121.01-5.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation protection technician performance with respect to radiation protection work requirements and evaluated whether they were aware of the radiological conditions in their workplace, the RWP controls, and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

Documents reviewed were listed in the Attachment.

This inspection constituted one sample as defined in IP71121.01-5.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning And Controls (71121.02)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective exposure history, current exposure trends, ongoing and planned activities in order to assess current performance and exposure challenges. This included determining the plant's current three-year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment.

The inspectors reviewed the outage work scheduled during the inspection period and associated work activity exposure estimates for the following five work activities, which were likely to result in the highest personnel collective exposures:

- pressurizer weld overlay insulation shielding and support activities;
- pressurizer weld overlay project;
- SG ET testing and all tube repairs;
- reactor head component disassembly and reassembly; and
- split pin modifications.

The inspectors reviewed documents to determine if there were site-specific trends in collective exposures and source-term measurements.

The inspectors reviewed procedures associated with maintaining occupational exposures ALARA and processes used to estimate and track work activity specific exposures.

Documents reviewed were listed in the Attachment.

This inspection constituted four required samples as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning.

a. Inspection Scope

The inspectors evaluated the licensee's list of work activities ranked by estimated exposure that were in progress and reviewed the following five work activities of highest exposure significance:

- pressurizer weld overlay insulation shielding and support activities;
- pressurizer weld overlay project;

- SG ET testing and all tube repairs;
- reactor head component disassembly and reassembly; and
- split pin modifications.

For these five activities, the inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements in order to verify that the licensee had established procedures and engineering and work controls that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA. This also involved determining if the licensee had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the results achieved including dose rate reductions and person-rem used with the intended dose established in the licensee's ALARA planning for these five work activities. Reasons for inconsistencies between intended and actual work activity doses were reviewed.

Documents reviewed were listed in the Attachment.

This inspection constituted three required samples as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and bases for the current annual collective exposure estimate including procedures, in order to evaluate the licensee's methodology for estimating work activity-specific exposures and the intended dose outcome. Dose rate and man-hour estimates were evaluated for reasonable accuracy.

The licensee's process for adjusting exposure estimates or re-planning work, when unexpected changes in scope, emergent work or higher than anticipated radiation levels were encountered, was evaluated. This included determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles and not adjusted to account for failures to control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

Documents reviewed were listed in the Attachment.

This inspection constituted two required samples as defined in IP 71121.02-5.

a. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Control Inspection Scope

The inspectors observed the following five jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- pressurizer weld overlay insulation shielding and support activities;
- pressurizer weld overlay project;
- SG ET testing and all tube repairs;
- reactor head component disassembly and reassembly; and
- split pin modifications.

The licensee's use of ALARA controls for these work activities was evaluated using the following:

The licensee's use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the licensee's ALARA reviews, that sufficient shielding of radiation sources was provided for and that the dose expended to install/remove the shielding did not exceed the dose reduction benefits afforded by the shielding.

Documents reviewed were listed in the Attachment.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

Radiation worker and radiation protection technician performance was observed during work activities being performed in radiation areas, airborne radioactivity areas, and high radiation areas that presented the greatest radiological risk to workers. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope and tools to be used, by utilizing ALARA low dose waiting areas and by complying with work activity controls. Also, radiation worker training and skill levels were reviewed to determine if they were sufficient relative to the radiological hazards and the work involved.

Documents reviewed were listed in the Attachment.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Review of Blowdown Line Operations and Tritium Remediation Efforts

a. Inspection Scope

The inspectors continued to monitor the licensee's activities resulting from historical inadvertent leaks of tritiated liquid from the blowdown line. The inspectors continued to accompany licensee employees and contractors during their collection of water samples at 23 monitoring locations of interest. The inspectors verified by direct observation that the water samples were being taken from the locations specified, that proper sampling protocols were followed, and that split samples were properly obtained and labeled. The inspectors took direct custody of the split samples and maintained a chain of custody as the samples were sent to the NRC's contract laboratory. The inspectors also reviewed the results of December 12, 2007, split samples to ensure that the results from the licensee's and NRC's contract laboratories matched within normal statistical variance.

Documents reviewed were listed in the Attachment.

This inspection does not constitute a sample as defined in IP 71122.02-5.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Radioactive Waste System Walkdowns

a. Inspection Scope

The inspectors reviewed changes to the waste processing system to verify the changes were reviewed and documented in accordance with 10 CFR 50.59 and to assess the impact of the changes on radiation dose to members of the public.

Documents reviewed were listed in the Attachment.

This inspection does not constitute a sample as defined in IP 71122.02-5.

b. Findings

One finding of very low safety significance was identified.

Failure to Sample a Temporary Tank at the Required Periodicity

Introduction: The inspectors identified a finding of very low safety significance (Green) and an NCV of TS 5.4, and Technical Requirements Manual (TRM), Appendix L, for failure to sample temporary waste water tanks at the Unit 2 Containment Access facility.

Description: On May 1, 2008, the inspectors identified that the licensee had failed to sample the temporary wastewater storage tanks that were installed for the Unit 2 refueling outage to hold shower and wash water from the Unit 2 Containment Access Facility at the required frequency of seven days. This failure resulted in two missed samples of the Unit 2 Containment Access Facility shower tanks. The licensee's corrective measures consisted of immediately collecting and monitoring the required sample. The results of this sample indicated that the quantity of radioactive material was well below the limits provided in the TRM. Additionally, the licensee started the process to review and revise Procedure RP-BR-654, Revision 0. This revision was necessary to reflect the temporary tank sampling requirement of TRM, Appendix L, implemented to limit the quantity of radioactive material contained in outside temporary tanks and verify the compliance with the limits by sampling the contents at least once per seven days when in use. The inspectors observed that Procedure RP-BR-654, as written, did not direct the required sampling frequency as outlined in TRM, Appendix L.

After identification by the inspectors, the licensee documented the issue in IR 770446, conducted the required sampling, revised the scheduling tool to ensure the tank is sampled at least every seven days, and planned to revise Procedure RP-BR-654.

Analysis: The inspectors determined that the failure to sample the contents in the outdoor liquid radwaste storage tanks did not meet the requirements of TRM, Appendix L and was a performance deficiency that warranted a significance evaluation. The finding involves an occurrence in the licensee's radioactive material control program that is contrary to the licensee's procedures. The finding was more than minor because it impacted the program and process attribute of the Public Radiation Safety Cornerstone and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive material released into the public domain, in that the failure to measure the levels of radioactivity in the temporary storage tanks had the potential to impact the licensee's effluent program.

The inspectors applied the IMC 0609, Appendix D, to this finding. The finding is in the licensee's radiological effluent monitoring program. The finding did not involve a failure to implement the effluent release program nor did public dose exceed Appendix I, Criterion, or 10 CFR 20.1302(e) and the finding was determined to be of very low safety significance (Green). This conclusion was based on no tank contents being released or discharged without sampling, and the total content limits were not exceeded.

The primary cause of this sampling failure was related to the cross-cutting component of Human Performance, Work Practices (Item H.4.C of IMC 0305) because the licensee did not ensure that supervisory and management oversight of procedure development was adequate to assure nuclear safety, specifically, procedures that are complete, accurate.

Enforcement: Technical Specification 5.4.1(a) requires written procedures be established, implemented and maintained covering the applicable procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. TRM, Appendix L, required the quantity of radioactive material contained in any outside temporary tank be determined to be within the acceptance criteria by analyzing a representative sample of the tank's contents at least once per seven days when radioactive materials are being added to the tank. Procedure RP-BR-654 was written to implement the requirements of the TRM.

Contrary to the above, as of May 1, 2008, the licensee's Procedure RP-BR-654 did not include the requirement for sampling at least once per seven days. Consequently, the licensee failed to sample decontamination drain waste tanks, temporary tanks, adjacent to the Unit 2 Containment Access Facility at least once per seven days. Because of the very low safety significance of this finding and because the issue was entered into the licensee's CAP (IR 770446), it was treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000456/2008003-04; 05000457/2008003-04).

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 RCS Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Specific Activity PI for Braidwood, Units 1 and 2. To determine the accuracy of the PI data reported during those periods, the PI definition and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's RCS chemistry samples, TS requirements, IRs, LERs, and NRC Integrated Inspection reports for the period of April 1, 2007, to March 31, 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a RCS sample. Specific documents reviewed were described in the Attachment.

This inspection constituted two RCS specific activity samples as defined by IP 71151-05.

b. Findings

No findings of significance were identified.

.2 RCS Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Leakage PI for Braidwood, Units 1 and 2. To determine the accuracy of the PI data reported during those periods, the PI definition and guidance contained in the NEI Document 99-02, Revision 5, was used. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, IRs, LERs, and NRC Integrated Inspection Reports for the period of April 1, 2007, to March 31, 2008, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been

identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed were described in the Attachment.

This inspection constituted two RCS leakage samples as defined by IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of items Entered Into the CAP

a. Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included:

- the complete and accurate identification of the problem;
- that timeliness was commensurate with the safety significance;
- that 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 attached list of documents reviewed.

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 the Attachment.

b. Findings

No findings of significance were identified.

.2 Daily CAP Reviews

a. 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 of significance were identified.

.3 Semi-Annual Trend Review

a. 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 40A2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of September 1, 2007 through March 31, 2008, 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.

Documents reviewed were listed in the Attachment.

This review constituted a single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings of significance were identified.

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 Seismic Event

a. Inspection Scope

The inspectors reviewed the plant's response to a seismic event felt at the plant due to an earthquake in southern Illinois on April 18, 2008. Although the ground motion was felt in the plant, the motion was apparently not strong enough to activate the seismic monitoring system and annunciators. The inspectors collected the information necessary to communicate the event details to regional supervision, observed plant parameters and licensee activities, confirmed that the licensee had properly classified the event, and conducted independent walkdowns of risk significant plant areas to verify

that no damage had occurred. The walkdowns included an inspection of all blowdown line vacuum breaker vaults, the areas over the buried blowdown piping, and the tritium mitigation pumping systems. Documents reviewed in this inspection were listed in the Attachment.

This inspection constituted one sample as defined in IP 71153-05.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) NRC Temporary Instruction (TI) 2515/166, "Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter [GL] 2004-02)" – Units 1 and 2

a. Inspection Scope

The inspectors reviewed the station implementation of the licensee's commitments documented in their December 31, 2007, response to GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized Water Reactors." The inspectors reviewed the Engineering Change Packages associated with the sump strainer modifications and the 10 CFR 50.59 evaluations for these Engineering Change Packages (ECs). The inspectors also reviewed documentation from the licensee and vendor pertaining to the strainer assembly specifications. In addition, the inspectors reviewed three samples of the completed and approved for use changes for the UFSAR, Revision 12, that have not been incorporated yet and one sample already incorporated in Revision 11. The documents reviewed were listed at the end of the report. The inspection was conducted in accordance with TI 2515/166.

Inspection Documentation

The inspectors determined the following answers to the Reporting Requirements detailed in the TI 2515/166:

(1) Did the licensee implement the plant modifications and procedure changes committed to in their GL 2004-02 responses?

The licensee has implemented the plant modifications and procedure changes committed to in their GL 2004-02 response with the exception of the installation and testing of ECCS (ECCS) throttle valves for Unit 2 for which an extension for completion until Spring 2008 was requested and approved. In addition, the licensee cancelled the cyclone separator modification for Unit 2 because test results showed that they are not susceptible to blockage as documented in EC 364979, "Evaluation of Wyle Test Report." The commitments included:

- Installation of permanent modification of the sump strainer assemblies including modification of the ECCS throttle valves and replacement of the fibrous insulation with reflective metal insulation within the zone of influence at Unit 1.

This commitment was previously reviewed and documented in NRC Inspection Reports 05000456/2007006 and 05000457/2006005. The licensee has received approval for an extension regarding the downstream effects portion of their modification for Unit 2. Structural analyses of the new strainer assemblies were performed through BRW-06-0015-M, "Design Loads and Sizing Limitations for the ECCS Containment Sump Trash Racks;" BRW-06-0030-S, "Evaluation of Auxiliary Steel for Sump Strainer Upper Sizing Restraints;" and 3SA-096.016, "CCI Structural Analysis of Strainer and Support Structure."

- Perform latent debris walkdowns, and debris generation and transport analyses.

The results of containment walkdowns were documented in analysis S040-BRW-6042, "[Generic Safety Issue] GSI-191 Latent Debris Collection." The debris generation was estimated and analyzed by BRW-05-0059-M, "GSI-191 Post LOCA (loss of coolant accident) Debris Generation." Debris transportation was analyzed through BRW-05-0060-M, "Post LOCA Debris Transport Evaluation for Resolution of GSI 191."

- Perform evaluation of strainer performance including chemical effects.

Strainer performance was evaluated in calculation 3SA-096.018, "Head Loss Calculation," which received inputs from strainer head loss testing documented in CCI Test Report 680/41222, "Chemical Filter Performance Report." In addition, the following tests were performed: (1) DIT-BRW-2006-0007, "Results of Test Debris Concentrations"; (2) Q.003.87 748, "Large Size Filter Performance Test Specification"; and (3) CCI Test Report 680/41134, "Large Size Filter Performance Test Report."

- Perform evaluation of downstream and upstream effects.

Downstream effects were evaluated by calculation BRW-05-0084-M, "Byron Units 1 and 2, and Braidwood Units 1 and 2, GSI-191 Downstream Effects - Vessel Blockage and Fuel Evaluation." Downstream wear and blockage was evaluated by calculation BRW-05-0063-M, "GSI-191 Evaluation of Long Term Downstream Effects." Testing of wear and blockage to the ECCS throttle valves and CSS cyclone separator was documented in WLTR53637, "Wyle Test Report on Debris Latent Test Results of 1 1/2" Copes Volcan Control Valve (SI 8810), A 2" Copes Volcan Control Valve (SI 8816), A 2" Copes Volcan Control Valve (SI 8822) and Cyclone Separator." Upstream effects were evaluated by S040-BRW-6054, "GSI-191 Debris Generation Walkdown."

- Determine minimum available net positive suction head margin for the RHR pumps at switchover to sump recirculation.

Minimum available net positive suction head margin was determined by BRW-06-0035-M, "NPSHA for RHR and containment spray pumps during Post LOCA Recirculation." The hydraulic model of the ECCS was

performed by BRW 06-0016-M, "SI/RHR/CS/CV System Hydraulic Analysis in Support of GSI 191."

- Establish programmatic controls to ensure that potential sources of debris introduced into containment are assessed for adverse affects.

The licensee performed an enhancement to CC-AA-102, "Design Input and Configuration Change Impact Screening," to introduce a requirement to review the impact of a proposed change on the documentation that forms the design basis for their response to GL 2004-02. In addition, the licensee upgraded OP-AA-116-101, "Equipment Labeling," and committed to use 1BwOS TRM 2.5.b.1, "Unit 1 Containment Loose Debris Inspection;" 2BwOS TRM 2.5.b.1, "Unit 2 Containment Loose Debris Inspection;" and CC-AA-205, "Control of Undocumented/Unqualified Coatings Inside Containment" as administrative controls for limiting debris sources inside containment. Also, IR 282077 is tracking the creation of a procedure for latent debris measurements inside containment every four refueling outages. This activity was tracked by Service Request No. 53465.

- (2) Has the licensee updated its licensing bases to reflect the corrective actions taken in response to GL 2004-02?

The licensee has updated its licensing bases to reflect the corrective actions taken in response to GL 2004-02 with the exception of the portions relative to the ECCS throttle valves modification at Unit 2 scheduled in Spring 2008.

- (3) If the licensee or plant has obtained an extension past the completion date of this TI, document what actions have been completed and what actions are outstanding.

The licensee requested and received approval for an extension until Spring 2008 to complete the installation and testing of ECCS throttle valves for Unit 2.

Completed actions are:

- installation of new strainer assemblies for both units;
- installation of modified ECCS throttle valves at Unit 1;
- replacement of fibrous insulation with reflective metal insulation within the zone of influence at Unit 1;
- programmatic controls had been put in place;
- associated analyses and testing; and
- licensing bases update of the pertinent completed actions.

Outstanding actions are:

- installation of modified ECCS throttle valves at Unit 2;
- update of licensing bases associated with installation of new strainer assemblies for both units; and

- IR 282077 is tracking the creation of a procedure for latent debris measurements inside containment every four refueling outages. This activity is being currently tracked by Service Request No. 53465.

This TI is closed for both units. This documentation of TI-2515/166 completion as well as any results of sampling audits of licensee actions will be reviewed by the NRC staff (Office of Nuclear Reactor Regulation - NRR) as input along with licensee's GL 2004-02 responses to support closure of GL 2004-02 and GSI-191 "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance." The NRC will notify each licensee by letter of the results of the overall assessment as to whether GSI-191 and GL 2004-02 have been satisfactorily addressed at that licensee's plants.

b. Findings

No findings of significance were identified.

.2 RCS Dissimilar Metal Butt Welds (DMBW) (TI 2515/172, Revision 0)

a. Inspection Scope

The inspectors conducted a review of the licensee's DBMW mitigation and inspection program to determine if it was implemented in accordance with the industry self-imposed mandatory requirements of Materials Reliability Program (MRP) -139, "Primary System Piping Butt Weld Inspection and Evaluation Guidelines." This review was conducted in accordance with TI 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds" for both Units 1 and 2.

The documents reviewed by the inspector for this inspection were listed in the Attachment.

From April 28, 2008, through May 6, 2008, the inspectors performed a review in accordance with TI-172 which included the following:

(1) Licensee's Implementation of the MRP-139 Baseline Inspections

The inspectors performed a review of the licensee's DBMW program to determine:

- if the licensee's inspection program for DBMWs included applicable welds exposed to pressurizer, hot let and cold leg temperatures;
- if the schedules for these baseline inspections were consistent with the requirements stated in MRP-139;
- if the baseline inspection schedules deviated from MRP-139 guidelines;
- the basis for any planned deviations from MRP-139 baseline inspection schedules; and

- the inspectors verified that the licenses had completed weld overlays on all Unit 2 pressurizer DMBWs during the Spring 2008 refueling outage.

(2) Volumetric Examinations

The inspectors observed and/or reviewed records for the following volumetric examinations for:

- Unit 1, the inspectors performed a review of UT records from the Fall 2007 for the unmitigated reactor vessel outlet nozzle-to-safe end Inconel weld (1RV -01-22) at the 22 degree azimuth location; and
- Unit 2, the inspectors observed the licensee's vendor acquiring and analyzing UT data for the unmitigated reactor vessel inlet nozzle-to-safe end Inconel weld (2RV-01-24) at the 113 degree azimuth location.

The inspectors reviewed records of the following weld overlay volumetric examinations for:

- Unit 1, the inspectors performed a review of UT records from the Fall 2007 outage for the weld overlay repair of the pressurizer surge nozzle DMBW (1PN -01-SW-1) and the adjacent stainless steel safe-end to pipe/fitting welds; and
- Unit 2, the inspectors performed a records review from the current outage of the UT data for the weld overlay repair of two pressurizer safety nozzle DMBWs (2PN-04-SW-4 and 2PN-06-SW-6) and the adjacent stainless steel safe-end to pipe/fitting welds.

The inspectors performed the reviews of volumetric examinations identified above to determine if:

- the examinations were performed in accordance with the guidelines in MRP-139 Section 5.1;
- the examinations were performed consistent with the NRC staff relief request authorization for the weld overlay;
- the examination coverage warranted further evaluation and if so, the inspector reviewed the licensee's basis for achieving the inspection coverage credited;
- the volumetric examinations were performed by qualified personnel; and
- deficiencies were appropriately dispositioned.

(3) Weld Overlays

For Unit 1, the inspectors performed a review of licensee records for the pressurizer surge nozzle (1-PN-01-SW-1) weld overlay completed in the Fall 2007.

For Unit 2, the inspectors observed the weld overlay repairs completed for the pressurizer safety nozzle "A" (2PZR-01-SE-02) and safety nozzle "B" (2PZR-01-SE-04).

The inspectors performed the review of weld overlays identified above to determine if:

- the overlays were performed in accordance with ASME Code requirements as modified by NRC staff relief request authorizations;
- the licensee submitted appropriate relief requests and obtained NRR staff authorization to install the weld overlays;
- the overlay welding was performed by qualified personnel; and
- deficiencies were appropriately dispositioned, and resolved.

(4) Mechanical Stress Improvement (SI)

There were no stress improvement activities performed or planned by the licensee. Therefore, the inspectors did not perform a review for this inspection attribute.

(5) ISI Program

The inspectors performed a review of the licensee's DMBW inspection program to determine if:

- it included the applicable welds required by MRP-139;
- the welds were identified with inspection categories consistent with the MRP-139 guidelines;
- the licensee's DMBW program and procedures required inspection frequencies consistent with Tables 6-1 and 6-2 of MRP-139;
- any DMBWs were categorized as "H" or "I" and for these welds, the licensee's basis for this categorization and the licensee's plans to address the potential for primary water stress corrosion cracking; and
- deviations were planned from the inspection guidelines of MRP-139.

b. Observations

Summary: Braidwood Units 1 and 2 are Westinghouse four loop design plants. For each unit, the licensee had identified a population of DMBWs susceptible to primary water stress corrosion cracking in accordance with MRP-139 guidelines. The licensee had completed mitigation by weld overlay repairs to the pressurizer DMBWs on both units. The licensee had not decided on mitigation methods for the remaining DMBW susceptible to primary water stress corrosion cracking (e.g., MRP-139 categories "D" and "E").

For Unit 1, during the Fall 2007 outage, the licensee completed baseline examinations of the pressurizer DMBWs after completing weld overlay repairs and had not deviated from the MRP-139 inspection guidelines.

For Unit 2, the licensee had previously taken a deviation from MRP-139 for the DMBW on the pressurizer surge line, since it was not inspected or mitigated by December 31, 2007. The licensee completed weld overlay repairs on the pressurizer DMBWs during the current outage including the DMBW at the pressurizer surge line. The inspectors confirmed that the licensee performed appropriate weld overlay repairs and UT to the pressurizer surge line weld such that a deviation from the MRP-139 guidelines no longer existed.

In accordance with requirements of TI 2515/172, Revision 0, the inspectors evaluated and answered the following questions:

(1) Licensee's Implementation of the MRP-139 Baseline Inspections

1. Have the baseline inspection been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

Yes. Baseline inspections of all hot and cold leg DMBWs were completed.

Were the baseline inspections of the pressurizer temperature DMBWs of the nine plants listed in 03.01.b completed during the spring outages?

Yes. Baseline inspections of the Braidwood Unit 2 pressurizer DMBWs were completed after applying weld overlay repairs during the Spring 2008 outage.

2. Is the licensee planning to take any deviations from the MRP-139 baseline inspection requirements? If so, what deviations are planned, what is the general basis for the deviation, and was the NEI- 03-08 process for filing a deviation followed?

No. The licensee was not planning to take any further deviations from the MRP-139 baseline inspection requirements. For Unit 2, the licensee had previously taken a deviation from MRP-139 for the pressurizer DMBW's, since they were not inspected or mitigated by December 31, 2007. The basis for this deviation was the low susceptibility of the material and the timing of the Spring 2008 refueling outage. The NEI-03-08 process for filing the deviation was followed. The licensee completed weld overlay repairs on the pressurizer DMBWs during the current outage. The inspectors confirmed that the licensee performed appropriate weld overlay repairs and UT to the pressurizer DMBW's such that a deviation from the MRP-139 guidelines no longer existed.

(2) Volumetric Examinations

1. Performed in accordance with the examination guidelines in MRP-139, Section 5.1, for unmitigated welds or mechanical stress improvement welds and consistent with NRC staff relief request authorization for weld overlaid welds?

Yes. For Unit 1, the inspectors performed a records review of the UT data for the unmitigated reactor vessel outlet nozzle-to-safe end Inconel weld at the 22 degree azimuth location. The licensee's vendor use a Performance Demonstrated Initiative (PDI) qualified automated UT technique and achieved the ASME Code, Section XI required weld volume.

Yes. For Unit 2, the inspectors observed the licensee's vendor acquiring and analyzing UT data for the unmitigated reactor vessel inlet nozzle-to-safe end Inconel weld at the 113 degree azimuth location. The licensee's vendor used a PDI qualified automated UT technique and achieved the ASME Code Section XI required weld volume.

2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

Yes. For both Units, the licensee's vendor staff that analyzed the UT data for the unmitigated reactor coolant loop nozzle-to-safe end welds, were certified to UT Level II requirements in accordance with a vendor procedure (WDP-9.2 WesDyne International Qualification and Certification of Personnel in Nondestructive Examination) to meet the training and certification requirements of the ASME Code Section XI, Appendix VII and VIII. For Unit 2, the inspectors also confirmed that the two dayshift vendor UT analysts had certification records issued by the PDI program established by EPRI, which documented successful performance testing required to meet the applicable ASME Code, Section XI, Appendix VIII supplement for examination of these welds.

3. Performed such that deficiencies were identified, dispositioned, and resolved?

Not applicable. No deficiencies or recordable indications were identified in the unmitigated nozzle-to-safe end Inconel welds.

(3) Weld Overlays

1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief request authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays?

- Yes. For each Unit, the weld overlays were performed in accordance with ASME Code welding requirements and consistent with the approved NRC relief request.
- Yes. For each Unit, the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays.
2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)
- Yes. For the weld overlays reviewed by the inspectors in each Unit, the welders fabricating the overlay had performed an ASME Code, Section IX – Welder Performance Qualification in accordance with the vendor’s program for the weld overlay activities performed. The welder qualification records were transmitted to Exelon for review and concurrence in support of the A2R13 weld overlay work. The inspectors reviewed the welder qualification records including the welders’ ASME Code – Welder Maintenance Log.
3. Performed such that deficiencies were identified, dispositioned, and resolved?
- Yes. For Unit 1, rejectable surface indications were identified during the final weld overlay dye penetrant examination (PT). The licensee removed a small amount of weld material to remove these indications (e.g., buffed out) and reperformed a final PT to accept the weld overlay repairs. The inspectors reviewed the final PT records for the weld overlays affected and considered these deficiencies appropriately dispositioned and resolved.
- Yes. For Unit 2, the licensee’s vendor encountered problems resulting in loss of shielding gas during weld overlay fabrication. The licensee’s vendor ground out affected weld metal and rewelded portions of the overlay repair. Similar to the Unit 1 overlay, the licensee identified rejectable indications during the final weld overlay PT examinations for Unit 2. The licensee removed a small amount of weld material to remove these indications (e.g., buffed out) and reperformed a final PT to accept the weld overlay repairs. The inspectors reviewed the final PT records for the weld overlays affected and considered these deficiencies appropriately dispositioned and resolved.
- For Unit 2, during fabrication of the “B” safety nozzle, the licensee vendor identified that the overlap for the sacrificial layer weld was not in accordance with the weld procedure. The licensee removed (e.g., ground off) the incorrect weld overlap, completed a PT of the ground area, and then completed a proper weld overlap. The inspectors concluded that the licensee had taken appropriate corrective actions to resolve this deficiency.

(4) Mechanical Stress Improvement

No stress improvement activities have been performed for DMBWs nor did the licensee plan to perform mechanical stress improvement as a mitigation strategy for DMBWs.

(5) ISI Program

1. Has the licensee prepared an MRP-139 ISI program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

No. The licensee had not prepared a separate MRP-139 ISI program. However, the licensee had scheduled baseline and ISIs of DMBWs at frequencies consistent with the MRP-139 guidelines and the ASME Code, Section XI requirements.

2. In the MRP-139 ISI program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

Yes. For each Unit, the DMBWs were categorized in accordance with MRP-139.

3. In the MRP-139 ISI program, are the ISI frequencies, which may differ between the first and second intervals after the MRP-139 baseline inspection, consistent with the ISI frequencies called for by MRP-139?

Yes. The ISI frequencies, for DMBWs in each Unit, were consistent with the ISI frequencies required by MRP-139.

4. If any welds are categorized as H or I, briefly explain the licensee's basis of the categorization and the licensee's plans for addressing potential PWSCC.

For Unit 2, the pressurizer welds were categorized as "H" prior to the application of a structural weld overlay. The Category H was assigned due the difficulty of performing a PDI UT examination of these welds. After completing the weld overlay repairs, the licensee indicated that these DMBWs would be re-categorized as Category F in accordance with MRP-139 guidance.

For Unit 1, the licensee did not have DMBWs in the "H" or "I" Categories.

5. If the licensee is planning to take deviations from the ISI "requirements" of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

Not applicable. The licensee was not planning to take deviations from the MRP-139 guidelines.

c. Findings

No findings of significance were identified.

.3 (Closed) URI 05000456/2008001-01; 05000457/2008001-01, Failure to Control Regulatory Guide 1.97 Instrumentation Marking

a. Inspection Scope

During an initial operator licensing examination documented in Examination Report 05000456/2007301(DRS); 05000457/2007301(DRS), NRC inspectors identified a URI concerning the lack of procedural controls for labeling Regulatory Guide (RG) 1.97 post-accident indications on the main control room control panels. The inspectors opened URI 05000456/2008001-01; 05000457/2008001-01, "Failure to Control RG 1.97 Instrumentation Marking," to track this possible violation of NRC requirements. The licensee then found and provided copies of letters to the NRC and other information documenting commitments, current status, and corrective actions to be taken for post-accident instrument labeling deficiencies.

The inspectors reviewed the corrective action document (IR 688723), the licensee's plans to revise Procedures 1BwOSR 3.3.3.1, "Unit One Accident Monitoring Instrumentation Channel Checks" and 2BwOSR 3.3.3.1, "Unit Two Accident Monitoring Instrumentation Channel Checks," and Training Requests submitted to ensure familiarity with equipment included in Braidwood TS, Table 3.3.3-1, "Post Accident Monitoring Instrumentation."

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of TS 5.4.1, for failure to maintain adequate procedural controls for labeling RG 1.97 post-accident indicators on the control panels.

Description: UFSAR Appendix A1 described an NRC submittal for Braidwood Station's RG 1.97 instruments dated September 1, 1987. This letter committed the licensee to identifying post-accident instruments per RG 1.97, Revision 3, as part of their Detailed Control Room Design Review. Currently, no Braidwood Station procedure describes or controls these markings, which consist of a black dot on the panel next to the indicator. The markings were intended to indicate qualification for reliability under accident conditions. Therefore, if multiple indications conflicted during an accident, the operators should prefer the indicators with a black dot.

The inspectors identified that markings existed for numerous post-accident indications on both units' control panels and the simulator. When questioned about how these markings were controlled, the licensee stated that they were informally controlled as part of the PASSPORT database panels and was initially unable to provide a list of marked instruments due to the large number of RG 1.97 instruments and unmarked subcomponents which were also contained in the PASSPORT database.

To address the concern regarding the accuracy of these markings, the licensee walked down the panels, and reviewed the source documents and PASSPORT further. It was

determined that there were errors in both the Unit 1 and Unit 2 control rooms and the simulator, which included the following discrepancies:

- Control Room Indicator 1PI-405A, Unit 1 wide range RCS pressure, was not labeled with a black dot;
- Control Room Indicator 1LI-930, Unit 1 Refueling Water Storage Tank (RWST) level, was not labeled with a black dot;
- Control Room Indicator 1LI-931, Unit 1 RWST level, was not labeled with a black dot;
- Control Room Indicator 1LI-932, Unit 1 RWST level, was not labeled with a black dot;
- Control Room Indicator 1LI-933, Unit 1 RWST level, was not labeled with a black dot;
- Control Room Indicator 2LI-930, Unit 2 RWST level, was not labeled with a black dot;
- Control Room Indicator 2LI-931, Unit 2 RWST level, was not labeled with a black dot;
- Control Room Indicator 2LI-932, Unit 2 RWST level, was not labeled with a black dot;
- Control Room Indicator 2LI-933, Unit 2 RWST level, was not labeled with a black dot; and
- Simulator Indicator, 1PI-405A, Unit 1 wide range RCS pressure, was not labeled with a black dot.

The licensee initiated IR 688723, corrected the discrepancies identified by labeling the appropriate post-accident instruments and initiated Training Requests to evaluate the need for familiarization on post-accident monitoring instrumentation. In addition, the licensee planned to revise Procedures 1BwOSR 3.3.3.1, "Unit One Accident Monitoring Instrumentation Channel Checks" and 2BwOSR 3.3.3.1, "Unit Two Accident Monitoring Instrumentation Channel Checks" to validate RG 1.97 labeling periodically. The procedure revisions were being tracked by action tracking item 709180-02.

Analysis: The inspectors determined that the licensee's failure to perform adequate procedural controls was a performance deficiency warranting a significance evaluation in accordance with IMC 0612, Appendix B. The inspectors concluded that the finding was greater than minor because it could become a more significant safety issue if left uncorrected. Inaccurately labeled control room indicators of post-accident instrumentation could lead to confusion and hamper operator response if conflicting indications resulted due to accident conditions.

Using IMC 0609.04, the inspectors concluded that this issue was of very low safety significance (Green) because the finding was did not represent; a design or structure, system and component qualification deficiency; a loss of system safety function; an actual loss of safety function or exceed TS allowed outage time; an actual loss of safety function of one or more non-TS, risk-significant trains; or a potentially risk-significant scenario related to external initiating events.

The inspectors did not identify a cross-cutting aspect to this finding.

Enforcement: Technical Specification 5.4.1 required, in part, that written procedures be established and implemented for activities provided in RG 1.33, Revision 2, Appendix A, February 1978. Procedures specified in RG 1.33 included administrative procedures for equipment control. UFSAR 13.5, "Plant Procedures," stated that a formalized system of written procedures containing administrative and operating instructions in conformance with RG 1.33 was employed to ensure that all abnormal or emergency activities were conducted in a safe manner.

Contrary to the above, the inspectors identified that the licensee failed to control labeling of control panels for uniquely identifying RG 1.97 equipment. Specifically, the licensee failed to control labeling on both units' control panels and the simulator, resulting in improperly marked post-accident indicators. However, because this violation was of very low safety significance and was entered into the licensee's CAP, this violation was treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy. (NCV 05000456/2008003-05; 05000457/2008003-05)

This URI (05000456/2008001-01; 05000457/2008001-01) is closed.

.4 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 9, 2008, the inspectors presented the inspection results to Mr. B. Hanson, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- On April 2, 2008, the inspectors presented the TI 2515/166, "PWR Containment Sump Blockage (NRC GL 2004-02)," results to Mr. J. Petty, and other members of the licensee staff. The licensee acknowledged the issues presented.

- The results of the Access Control to Radiologically Significant Areas and ALARA Planning And Controls inspection with the Site Vice President, Mr. B. Hanson, on May 2, 2008.
- The results of the ISI Procedure 71111.08 and TI 72 with Mr. B. Hanson, Site Vice President on May 6, 2008. The inspectors returned proprietary information reviewed during the inspection prior to leaving the site.
- Licensed Operator Requalification Program Unresolved Item Inspection with Mr. G. Golwitzer, Acting Regulatory Assurance Manager, Braidwood Station, June 23, 2008, via telephone.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Hanson, Site Vice President
L. Coyle, Plant Manager
K. Aleshire, Emergency Preparedness Manager
D. Burton, Licensed Operator Requalification Training Group Lead
S. Butler, Operations Training Manager
B. Casey, Inservice Inspection Program
G. Dudek, Site Training Director
R. Gadbois, Maintenance Director
G. Golwitzer, Acting Regulatory Assurance Manager
D. Gullott, Regulatory Assurance Manager
K. Hall, Operations
J. Knight, Nuclear Oversight Manager
T. McCool, Operations Director
J. Moser, Radiation Protection Manager
J. Neybart, Maintenance Department
G. Panici, Senior Engineer
J. Petty, Licensing Engineer
L. Sanna, Maintenance Department
J. Sanchez, Operations Department
B. Schipiour, Work Management
M. Sears, Steam Generator Engineer
M. Smith, Engineering Director
T. Tierney, Chemistry, Environmental, and Radioactive Waste Manager

Nuclear Regulatory Commission

R. Skokowski, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000456, 457/2008003-03 URI AFW Tunnel Hatches Margins of Safety (Section 1R15)

Opened and Closed

05000456, 457/2008003-01 NCV Failure to Properly Implement Material control
Procedures (Section 1R01)

05000456, 457/2008003-02 NCV Inadequate Procedure (Section 1R06)

05000456, 457/2008003-04 NCV Failure to Sample a Temporary Tank at the Required
Periodicity (Section 2PS2)

05000456, 457/2008003-05 NCV Failure to Control Labeling on Both Units' Control Panels and Simulator (Section 4OA5)

Closed

05000456, 457/2008001-01 URI Failure to Control RG 1.97 Instrumentation Marking (Section 1R15)

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.

Section 1R01: Adverse Weather Protection

- 0BwOA ENV-1; Adverse Weather Conditions Unit 0; Revision 106
- 0BwOS XHT-A1; Unit Common High Temperature Equipment Protection Surveillance; Revision 2
- BwOP MP-26; Supplemental Main Power Transformer Cooling; Revision 0
- EN-BR-402-0005; Extreme Heat Implementation Plan; Revision 1
- MA-AA-718-026; Station Housekeeping/Material Condition Program; Revision 5
- WC-AA-107; Seasonal Readiness; Revision 5
- Exelon Nuclear Letter; Certification of 2008 Braidwood Summer Readiness; May 15, 2008
- IR 752473; NOS Identified Summer Readiness Procedure Action Dates Not Met, March 20, 2008
- IR 758730; Procedure Enhancement for 0BwOA ENV-1; April 3, 2008 [IEMA-Identified]
- IR 763083; 2CW003B Summer Readiness Action Not Being Performed in A2R13; April 4, 2008
- IR 767822; Safety – Flying Debris On Site; April 25, 2008
- IR 767858; Adverse Weather Conditions – Entered BwOA ENV-1; April 25, 2008
- IR 770357; Three Scaffold Poles and Material in Unit 1 Transformer Yard; May 1, 2008 [NRC-Identified]
- IR 771219; 0/1/2/ENV-1 Entry; May 2, 2008
- IR 775201; Unit 1 Turbine Oil Transient; May 13, 2008
- IR 778589; Main Power Transformer Supplemental Cooling Not Secured Properly; May 22, 2008 [NRC-Identified]
- IR 780318; IEMA Inspector Identified Housekeeping Concerns; May 28, 2008 [IEMA-Identified]
- IR 780777; NRC Identified Miscellaneous Debris in Transformer Yard; May 29, 2008 [NRC-Identified]
- IR 780979; Entry Into 0BwOA ENV-1, 1BwOA ENV-1, and 2BwOA ENV-1; May 30, 2008
- IR 781334; Security Camera 9 Went Out Due to Severe Weather; May 30, 2008
- IR 781339; Security Camera 5 Went Out Due to Severe Thunderstorm; May 30, 2008
- IR 781352; Entry Into 0/1/2 BwOA ENV-1; May 30, 2008
- IR 781363; Received Annunciator 0-38-E5, Accelerograph Acceleration High; May 30, 2008
- IR 781945; IEMA Identified Discharge Flex Hose Broken on 2VE09S; June 2, 2008 [IEMA-Identified]
- IR 782644; Replace D-181 Door Threshold; June 4, 2008 [NRC-Identified]
- 0BwOA ELEC-1 Abnormal Grid Conditions Unit 0; Revision 6
- OP-AA-108-107-1001 Station Response to Grid Capacity Conditions; Revision 2
- OP-AA-108-107 Switchyard Control; Revision 2

Section 1R04: Equipment Alignment

- BwOP DG-M4; Operating Mechanical Lineup Unit 2 2B D/G; Revision 11
- BwOP DG-E4; Electrical Lineup - Unit 2 2B Diesel Generator; Revision 5
- BwOP DG-M1; Operating Mechanical Lineup Unit 1 1A D/G; Revision 14

- BwOP DG-E1; Electrical Lineup - Unit 1 2A Diesel Generator; Revision 6
- BwOP AF-E1; Electrical Lineup – Unit 1 Operating; Revision 11
- BwOP AF-M!; Operating Mechanical Lineup Unit 1; Revision 10
- IR 787664; NRC Identified – Add Hand Switch Equipment Part Numbers to Shutdown Panel Labels; June 18, 2008 [NRC-Identified]

Section 1R05: Fire Protection

- Byron/Braidwood Nuclear Stations Fire Protection Report; Amendment 22; December 2006
- GOCAR Required Compensatory Measures Action Response Appendix R Emergency Lighting; May 5, 2008
- CC-AA-211; Fire Protection Program; Revision 2
- BwAP 110-1; Fire Protection Program System Requirements; Revision 28
- IR 760766; NRC Identified Rags in the 1B Containment Spray Pump Room; April 8, 2008 [NRC-Identified]
- IR 761728; Material Found Behind Fuel Oil Line on 2A Diesel Generator; April 10, 2008 [NRC-Identified]
- IR 761734; Material Left in 2A Safety Injection Pump Room; April 10, 2008 [NRC-Identified]
- IR 761778; IEMA Inspector Told the Work Execution Center the Back of MCC 133V4 Was Open; April 10, 2008 [IEMA-Identified]
- IR 764634; IEMA Inspector Identified Issues in 2A Safety Injection Pump Room; April 17, 2008 [IEMA-Identified]
- IR 771999; Appendix R Lights Almost Dead During 234V Bus Outage; May 5, 2008 [NRC-Identified]
- IR 772946; IEMA Identified Transient Combustible Material Behind MCC 233V5; May 7, 2008 [IEMA-Identified]
- IR 787368; NRC Identified Door D-226 Not Latching Closed Following Passage; June 17, 2008 [NRC-Identified]

Section 1R06: Flooding

- BwAP 1110-3; Plant Barrier Impairment Program; Revision 15
- IR 760446; Unit 2 SX Room Sump Alarm not Alarming; April 7, 2008
- IR 766773; Plant Barrier Impairment Compensatory Actions Changed, Not Identified by Shift; April 23, 2008 [IEMA-Identified]
- IR 771437; Missed Flood Watch on 2SXFS02-1 For Entire 12 Hour Shift; May 2, 2008

Section 1R07: Heat Sink Performance

- Calculation BRW-97-1072-M; Component Cooling Heat Exchanger Tube Plugging Evaluation; Revision 0
- Engineering Change EC 357161; Heat Exchanger Visual Inspection Acceptance Criteria; Revision 0
- IR 760868; 2CC01A – Unit 2 Component Cooling Heat Exchanger East Head Flange Degradation Increasing; April 9, 2008
- IR 761744; Cleaning Scrappers Stuck in Three Tubes in Unit 2 Component Cooling Heat Exchanger; April 10, 2008
- IR 761765; Seacure Tubing Eddy Current Inspection 2CC01A; April 10, 2008
- IR 763185; 2CC01A – 8 Tubes Plugged Per Eddy Current Test Data - Total = 49 Tubes; April 14, 2008

Section 1R08: ISI Activities

- IR 547480; Incorrect ISI Weld Inspected; October 22, 2006
- IR 550299; FME Event Steam Generator; October 28, 2006
- IR 552261; Steam Generator Chemistry Action Level 1; November 2, 2006
- IR 566370; Boric Acid Leak 2RH01CB-16 Flanged Connection; December 7, 2006
- IR 543851; Boric Acid Leak 2CV04AA Inlet Flange; October 13, 2006
- IR 549559; UT of 5 Welds Deferred to A2R13; October 26, 2006
- IR 576532; Degradation of Hydraulic Snubber Fluid; January 5, 2007
- IR 628474; Through-Wall Leakage 2SX27DA-10; May 11, 2007
- IR 628554; Misapplication of CGI Gaskets; October 10, 2007
- IR 664847; 2RC8037A Boric Acid Leakage; August 23, 2007
- IR 664853; 2RC8037B Boric Acid Leakage; August 27, 2007
- IR 681083; FME Event Steam Generator; October 6, 2007
- IR 681801; FME Event Steam Generator; October 8, 2007
- IR 684599; FME Event Reactor Vessel; October 14, 2007
- IR 768257; Flaw Evaluation not Scheduled; April 29, 2008
- IR 679564; PT Indication Discovered on Base Metal Exam on "C" Nozzle; October 3, 2007
- IR 679792; PT Indication Discovered on the A Safety Nozzle; October 3, 2007
- IR 684405; Weld Overlay Rejectable PT Indication; October 13, 2007
- IR 549140; NDE Indications Found During Weld Exam for VLV 2SI8952B; October 26, 2006
- IR 768009; Pressurizer Weld Overlay Anomaly; April 26, 2008
- UT Calibration Sheet A2R13-UT-045; Elbow-to-pipe Weld 2SI-01-03; April 29, 2008
- UT Calibration Sheet A2R13-UT-044; Elbow-to-pipe Weld 2SI-30-15; April 29, 2008
- Surface Examination Data (Magnetic Particle Examination); Steam Generator 16-inch Feedwater Nozzle to Stub Barrel; May 3, 2008
- UT Calibration Sheet A2R13-PN-04-SW-4; Pressurizer Safety "A" SWOL; May 4, 2008
- UT Calibration Sheet A2R13-PN-06-SW-6; Pressurizer Safety "C" SWOL; May 5, 2008
- PT Examination Sheets; Pressurizer Safety Nozzle A (PN-04-A); May 4, 2008
- PT Examination Sheets; Pressurizer Safety Nozzle C (PN-04-C); May 3, 2008
- UT Calibration Sheet A1R13-PN-01-SW-1; Pressurizer Surge Nozzle SWOL; October 14, 2007
- 900638-PT-008 (PT Examination Sheets); Pressurizer Surge Nozzle to Pipe 1PN-01-SW-1; Pressurizer Surge Nozzle to Pipe 1PN-01-SW-1
- ISI-PDI-UT-2; Ultrasonic Examination of Austenitic Piping Welds in Accordance with PDI-UT-2; Revision 4
- EXE-ISI-70; Magnetic Particle Examination; Revision 2
- PDI-ISI-254-SE; Remote Inservice Examination of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe and Safe End; Revision 2
- PDI-ISI-254; Remote Inservice Examination of Reactor Shell Welds; Revision 7
- ER-AP-420-0051; Conduct of Steam Generator Management Program Activities; Revision 11
- ER-AP-331; Boric Acid Corrosion Control (BACC)Program; Revision 3
- ER-AP-331-1001; BACC Locations, Implementation and Inspection Guidelines; Revision 3
- ER-AP-331; BACC Program Identification, Screening and Evaluation; Revision 3
- GDP-9.7; Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials and Cladding; Revision 11
- PS-03; GQP 9.7 Procedure Supplement; March 13, 2008
- EXE-PDI-UT-108; Ultrasonic Examination of Weld Overlay Similar and Dissimilar Welds in Accordance with PDI-UT-8; Revision 1
- WDI-STD-1016; Generic Procedure for the Ultrasonic Informational Only Examinations of Weld Overlay Material Using Straight Bea (0°) and Angle Beam Probes; Revision 1

- WDI-SSP-1112; Procedure for Acquiring Material Thickness and Circumference Measurements of Liquid Penetrant Examination; Revision 4
- Examination Plan; 2008 – 10 Year Reactor Vessel Examination Program Plan (Scan Plan); Revision 0
- Report; Steam Generator Condition Monitoring Operational Assessment Report; Revision 0
- Report ED-BWR-08-003; Braidwood Unit 2 Steam Generator Inspection Degradation Assessment and Condition Monitoring Input Checklist for A2R13; April 14, 2008
- Report ED-BWR-08-005; Braidwood Unit 2 Steam Generator Inspection Degradation Assessment and Condition Monitoring Inp Use of Appendix H Qualified Techniques at Braidwood Unit 2 A2R13 Outage; March 10, 2008
- Boric Acid Evaluation; RCP 2B No 1 Seal Flow Element; January 15, 2007
- Boric Acid Evaluation; 2B Reactor Coolant System Loop Drain Isolation Valve; December 7, 2007
- ETSS CDE-001-0408; 0.610 Bobbin 40 IPS; Revision 0
- ETSS CDE-002-0408; 0.590 Bobbin 24 IPS; Revision 0
- ETSS CDE-003-0408; 3 Coil +Point; Revision 0
- ETSS CDE-004-0408; 3 Coil +Point (Dent); Revision 0
- ETSS CDE-005-0408; 3 Coil +Point (Mag Bias); Revision 1
- ETSS CDE-006-0408; Low Row U-Bend +Point; Revision 1
- ETSS CDE-007-0408; High Row U-Bend +Point; Revision 0
- WDI-PJF-1303502-TR-003; Investigation on the Variation in Reference Sensitivity Between Nominal 3/32-Inch (0.094) Diameter Side-Drilled Holes with Diameter Increases Up to 0.0025-Inch; Revision 0
- CMTR; Inconel Filler Metal 52M .045 x 10Spl; June 1, 2007
- WPS 8 MC-GTAW; Machine GTAW for SWOL; Revision 10
- PQR 046 R/3; PQR for WPS 8 MC-GTAW; Revision 3
- PQR 062 R/3; PQR for WPS 8 MC-GTAW; Revision 3
- PQR 600; PQR for WPS 8 MC-GTAW; Revision 4
- WPS 8-MN-GTAW/SMAW; Manual GTAW/SMAW for SWOL; Revision 15
- PQR 063; PQR for WPS 8-MN-GTAW/SMAW; Revision 3
- WO 00985967; Weld Overlay for Unit 1 Pressurizer Surge Nozzle (PN-01); September 27, 2007
- Contract 00412187; Transmittal of PCI Welder Qualification Records for A2R13 Pressurizer SWOL; April 16, 2008
- WO 01078103-04; Weld Overlay Traveler for Pressurizer Unit 2 “A” Nozzle Overlay; March 14, 2008
- WO 01078103-08; Weld Overlay Traveler for Pressurizer Unit 2 “C” Nozzle Overlay; March 14, 2008
- WEG-SWOL-01; Determination of SWOL Weld Track Travel Speed; Revision 0
- WPS 3-8/52-TB MC-GTAW-N638; Machine GTAW for SWOL (P3-P8); Revision 7
- PQR 677; PQR for WPS 3-8/52-TB MC-GTAW-N638; April 9, 2001
- PQR 750; PQR for WPS 3-8/52-TB MC-GTAW-N638; Revision 1
- PQR 770; PQR for WPS 3-8/52-TB MC-GTAW-N638; Revision 4

Section 1R12: Maintenance Effectiveness

- BwOP SA-1; Startup and Operation of Station Air Compressors; Revision 36
- IR 772936; NRC Identified Maintenance Rule Website Not Up-to-Date For SA System; May 7, 2008 [NRC-Identified}
- IR 352740; Unit 1 Station Air Compressor Tripped During Start Attempt; July 15, 2005
- IR 502360; U-2 SAC has High Vibes; June 21, 2006
- IR 503175; Unit 2 SAC Tripped on High Vibrations; June 24, 2006

- IR 501537; U-2 SAC Tripped on Hi Oil Temperature; June 19, 2006
- IR 613656; Unit 0 SAC High Speed Vib was Noted Higher During Post Maintenance Testing; April 4, 2007
- IR 659297; Unexpected Alarm, High CO content in Service Air; August 10, 2007
- IR 577250; Corrective Actions from EACE Not incorporated into SAC Work; January 10, 2007
- IR 601858; U2 SAC Tripped on Driver Fault During Run After Maintenance; March 10, 2007
- IR 618457; Unit 2 SA System Exceeding MR Unavailability; April 17, 2007
- IR 640810; Service Air Drop Drain is Clogged; June 15, 2007
- IR 502397-04;(a)(1) Determination; April 24, 2007

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

- Unit 2 Component Cooling Heat Exchanger Work Window Protected Equipment; April 7, 2008
- Braidwood Operating Department Memorandum 3-04; Physical Posting of Protected Equipment; Revision 3
- TS 3.0.4.b Evaluation – Mode 3 Entry With 2AF01PB Unavailable; Revision 0
- ER-AA-600-1042; On-Line Risk Management; Revision 4
- Protected Equipment List; 2B AFW Pump Unavailable During Mode 3 Entry; May 15, 2008
- WO 1135330-05; Troubleshoot 2E Main Power Transformer Transfer Circuit
- IR 775470; 2B AFW Pump did not Start While Performing Testing; May 14, 2008
- IR 775798; 2B AFW Pump Gear Box Auxiliary Lube Oil Pump did not Shut Off; May 15, 2008
- IR 776054; 3.0.4.B Risk Assessment – 2AF01PB Wrong Revision Referenced; May 15, 2008 [NRC-Identified]
- IR 776288; Bolting Issue with 2B AFW Pump Gear Driven New Pump, May 16, 2008
- IR 776728; 2E Main Power Transformer Cooling Fans Will Not Auto-Transfer; May 16, 2008

Section 1R15: Operability Evaluations

- BwAP 2200-2; Shutdown Safety Contingency Plan for the Reactor Head Reassembly Sequence; Revision 0
- 1BwEP-0 Reactor Trip or Safety Injection Unit 1; Revision 2
- BwMP 3300-005; Primary Containment Equipment Hatch Removal and Installation; Revision 5
- 2BwOA PRI-10; Loss of RH Cooling Unit 2; Revision 102
- 2BwOS XPC-W1; Unit 2 Containment Penetration Status Weekly Surveillance; Revision 15
- ER-AA-1200; Critical Component Failure Clock; Revision 4
- Shaw A2R13 Containment Closure Plan; April 24, 2008
- EC 369245; Auxiliary Feedwater Tunnel Flood Seal Cover Modification, Unit 1; Revision 0
- Design Analysis 5.6.3-BRW-08-0045-S; Structural Evaluation of the Flood Seal Cover Support in the Main Steam Isolation Valve Rooms, Unit 1, Per EC 369245; Revision 0
- IR 620080 (Byron); Auxiliary Feedwater Tunnel Cover Bolt Uses Non-Standard Safety Factor; April 21, 2007
- IR 623323 (Byron); Request Permission to Look For Problem; April 30, 2007
- IR 629677 (Byron); Difference in Professional Opinion on Jet Impingement; May 15, 2007
- IR 653093 (Byron); The Auxiliary Feedwater Tunnel Covers do not Meet Expected Safety Factors (July 24, 2007)
- IR 654270; Auxiliary Feedwater Tunnel Cover Bolt Evaluation Uses Non-Standard Safety Factors; July 26, 2007
- IR 759038; OVC21YC Damper Does not open when required; April 3, 2008
- IR 759803 1CS01PA-M Lower Motor Oil Reservoir Shows Low oil; April 6, 2008
- IR 762106; 1SX169A Failed to Open when 1A D/G was Started
- IR 763028 1A CS Add Flow Surveillance invalid- Test Gauge Failed Post Cal; April 14, 2008

- IR 763179 1CS021A- U1 TR A CS Spray Add Flow Test As-Found Unsat; April 14, 2008
- IR 764362; Small Oil Leak on 2CV01PA; April 17, 2008 [IEMA-Identified]
- IR 764527 (Byron); Unit 1 Auxiliary Feedwater Tunnel Cover Modification – WO Needs Research; April 17, 2008
- IR 772939; NRC Identified Enhancement for A2R13 Containment Closure Plan; May 7, 2008 [NRC-Identified]
- IR 780531; Confusion Regarding Traceability of Past Operability Determinations; May 29, 2008 [IEMA-Identified]
- IR 783849; Load Factor Not Used For Evaluation of Auxiliary Feedwater Tunnel Cover; June 6, 2008 [NRC-Identified]

Section 1R19: Post Maintenance Testing

- BwOP FW-1; Start up of a Turbine Driven Main Feedwater Pump ;Revision 27
- 2BwOS DG-2B; 2B Diesel Generator Overspeed Trip Test; Revision 2
- 2BwOSR 3.8.1.2-2; Unit 2 2B Diesel Generator Operability Surveillance; Revision 21
- BwVSR 900-35; Diesel Generator Governor Set-Up Following Governor Replacement; Revision 6
- 2BwVSR 5.5.8.SX.2 ASME Surveillance Requirements for 2B Essential Service Water Pump; Revision 7
- IR 771344; 2DG01KB – A Lube Oil Pump Trips on Thermals; May 3, 2008
- IR 771613; 2B DG – No Lube Oil Pressure After Start; May 4, 2008
- IR 771646; 2B DG Lube Oil Pressure; May 5, 2008
- IR 772525; 2B DG Electronic Governor did not Control; May 6, 2008
- IR 773044; 2B DG Turbocharger Oil Pressure Requires Adjustment; May 8, 2008
- IR 771363; Moderate Corrosion Found on 2B SX PP Suction Piping; May 3, 2008
- IR 772055; Minor Corrosion Identified on Piping Associated with 2SX001B; May 5, 2008
- IR 774321; 2SX01PB Suction Flange Torque Incorrect in WO; May 11, 2008
- IR 774334; Minor Oil and Water Leaks on 2B SX Pump; May 11, 2008
- IR 782115; Poor Coordination of Heater Drain Pump Post Maintenance Test; June 2, 2008
- IR 782163 2B FW PP Oil Pressure Up Light Anomaly- 2FW01PB-A; June 2, 2008
- IR 782558; Evaluate the 2C Heater Drain Pump Return to Service Process; June 3, 2008
- IR 788991; 1FW039A Exceeds Operability Stroke Time; June 21, 2008
- MA-AA-716-004; Attachment 1 Troubleshooting Log; Revision 6
- MA-AA-716-004; Attachment 1 Troubleshooting Log; Revision 7
- WC-AA-114; 1BwOSR 3.6.3.5.FW-3, Low Low Feedwater Isolation Valve 1FW039 Valve Stroke Surveillance; Revision 16
- WO 113913; 2BMFP Stop Valve
- WO 436515 MM-SX Pump/Motor Replacement; April 21, 2008

Section 1R20: Outage Activities

- 2BwGP 100-2; Plant Startup; Revision 23
- 2BwGP 100-3; Power Ascension 5 Percent to 100 Percent; Revision 44
- 2BwGP 100-4; Power Descension; Revision 26
- 2BwGP 100-5; Plant Shutdown and Cooldown; Revision 31
- BwVS 500-6; Low Power Physics Test Program
- A2R13 Shutdown Safety Management Plan; Revision 0
- A2R13 Containment Load Path Risk Assessment; Revision 0
- A2R13 Containment Atmosphere Management Plan; Revision 0

- Operating Experience Smart Sample FY2007-03; Crane and Heavy Lift Inspection, Supplemental Guidance for IP-71111.20; Revision 1
- IR 779213; A2R13 In-Mast Sipping Identified Two Leaking Fuel Assemblies; May 1, 2008
- IR 770869; IEMA Identified Issues With Risk Colors on Unit 2; May 2, 2008 [IEMA-Identified]
- IR 772605; 2B Tendon Tunnel Sump Pump Discharge Flange Leak; May 7, 2008 [NRC-Identified]
- IR 772453; Primary Containment Tendon End Cover V320 Grease Leakage; May 6, 2008 [NRC-Identified]

Section 1R22: Surveillance Testing

- BwOP PC-1; Local Leak Rate Flowmeter Monitor Operation; Revision 12
- BwOP DG-12; Diesel Generator Shutdown; Revision 24
- BwOP DG-11; Diesel Generator Startup; Revision 34
- BwOP RH-5; RH system Startup for Recirculation; Revision 20
- 1BwOSR 3.6.2.1-4; Unit One Primary Containment Type B Local Leakage Rate Test of the Emergency Hatch Airlock Door Gasket Interspaces; Revision 8
- 1BwOSR 3.7.5.4-2; U1 Diesel Driven Auxiliary Feedwater Pump Surveillance; Revision 14
- 1BwOSR 3.8.1.2-1; Unit One 1A Diesel Generator Operability Surveillance; Revision 23
- 1BwOSR 3.8.1.13-2; Diesel Generator Bypass of Automatic Trip Surveillances; Revision 7
- 1BwOSR 3.8.1.13-2; 1B Diesel Generator Bypass of Automatic Trip Surveillance; Revision 7
- BwVSR 3.7.1.1; Main Steam Safety Valves Operability Test; Revision 5
- 1BwVSR 5.5.8.AF.2; U1 Diesel Driven Auxiliary Feedwater Pump ASME Quarterly Surveillance; Revision 12
- 2BwVSR 5.5.8.RH.2; ASME Surveillance Requirements for Residual Heat Removal Pump 2RH01PB; Revision 7
- BwMP 3305-107; Main Steam Safety Valves Lift Point Verification Using the Furmanite Trevitest System; Revision 13
- IR 726426; 2B RH Recirc flow Below the Acceptance Criteria; January 24, 2008
- IR 762106; 1SX169A Failed to Open When 1A Diesel Generator Was Started; April 11, 2008
- IR 762445; 1A Diesel Generator Failed to Run for 5 Minutes in Cooldown; April 11, 2008
- IR 763170; Potential Local Leak Rate Test Issue on Emergency Hatch Surveillance; April 14, 2008 [NRC-Identified]
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- IR 787525; 1B AFW Pump Maintenance run Results - 1AF01PB; June 18, 2008
- WO 9629213; Main Steam Safety Valves Operability Test
- WO 1122729 01; September ASME Surveillance Requirement for 2B Residual Heat Removal Pump; June 25, 2008

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- IR 760253; Detector Maximum Dose Rate in UFSAR Higher Than Seen in; A1R13; April 7, 2008
- IR 767338; Hydrogen Alarms Occurring in Unit 2 Containment Cause Delays; April 24, 2008
- RP-AA-376; Radiological Postings, Labeling, and Markings; Revision 2
- RP-AA-460; Controls for High and Very High Radiation Areas; Revision 12
- ASSA 560706; Self Assessments – Access Control to Radiologically Significant Areas; May 2, 2007

Section 2OS2: ALARA Planning And Controls

- IR 762961; Dose Estimate Not Sufficient to Complete Work; April 14, 2008
- IR 763295; Job Stopped Dose Concerns for Work; April 14, 2008
- IR 763451; Mechanical Maintenance Received Unplanned Dose for Hot Shop Work; April 4, 2008
- IR 764139; Dose Goal Exceeded For Safety Injection Pump Room Scaffolds; April 15, 2008
- IR 0770531; Decision on Pressurizer Spray Nozzle Flush/Peroxide Addition; May 1, 2008
- RP-AA-400; ALARA Program; Revision 4
- RP-AA-401; Operational ALARA Planning and Controls; Revision 8
- RWP 10008701; Reactor Head Component Disassembly and Reassembly; Revision 1
- RWP 10008715; Split Pin Modifications; Revision 2
- RWP 10008730; Pressurizer Weld Over Lay Project; Revision 0
- RWP 10008731; Pressurizer Weld Over Lay Insulation, Shielding and Support Activities; Revision 0
- RWP 10008740; Steam Generator Eddy Current Testing and All Tube Repairs; Revision 0
- RWP 10008669; ALARA Work in Progress Review Routine Fuel Handling Activities; Revision 9
- RWP 10008670; ALARA Work in Progress Review Fuel Moves; Revision 9
- RWP 10008678; ALARA Work in Progress Review In-service Inspections; Revision 9
- ASSA 560752; Self Assessments – Radiological Work permits and ALARA Hold Points; December 12, 2007
- RWP 10008741; ALARA Work in Progress Review Sludge Lance; Revision 9

Section 2PS1: Radioactive Gaseous And Liquid Effluent Treatment And Monitoring Systems

- EC 362141; Installation of New 500,000 Gallon Radwaste Storage Tank; Revision 001
- IR 761293; Post Modification Test for EC 362141 Stopped and System Restored; April 9, 2008
- IR 761802; Water in Radwaste Storage Tank Berm at 3,374 PICl/L; April 10, 2008
- IR 762422; 0WX027T Concrete Pad Tritium Analysis High; April 11, 2008
- IR 772572; North Oil Separator Tritium Concentration Exceeds 1150 PCl/L; May 6, 2008
- IR 773004; Tritium Concentration Higher Than Desired in Turbine Equipment and Fire and Oil Sumps; May 7, 2008
- IR 773067; ODCM – Unit 2 Gas Effluent Dose Projection Exceeds 0.3 MREM; May 8, 2008
- IR 775872; Challenge to Annual Liquid Release Curie Limit; May 15, 2007
- IR 777809; Watchdog Alarms Multiple Vacuum Breakers; May 20, 2008
- IR 781144; Dispose of Drums by Vacuum Breaker #2; May 30, 2008

Section 2PS2: Radioactive Material Processing and Transportation

- IR 770446; Sampling of Shower Tanks for Containment Access Facility Not Sampled Per Technical Requirements Manual Appendix L; May 1, 2008
- EC 368927; Unit 2 Containment Access Facility: Fire Protection and Temporary Decontamination Tanks; Revision 001
- RP-BR-654; Unit 1(2) Containment Access Facility Liquid and Air Sampling and Disposal Requirements; Revision 0
- Technical Requirements Manual, App L; Explosive Gas and Storage Tank Radioactivity Monitoring Program; Revision 44

Section 4OA1: PI Verification

- LS-AA-2090, Monthly Data Elements for NRC Reactor Coolant System (RCS) Specific Activity, Revision 4
- LS-AA-2100, Monthly Data Elements for NRC RCS Leakage, Revision 5
- 1BwOSR 3.4.13.1, Unit One RCS Water Inventory Balance Surveillance, Revision 18
- 2BwOSR 3.4.13.1, Unit Two RCS Water Inventory Balance Surveillance, Revision 18

Section 4OA2: Identification and Resolution of Problems

- Braidwood Quarterly System Health Report; 4th quarter 2007
- Standing Order 07-002; Human Performance Expectation; March 19, 2008

Section 4OA3: Followup of Events and Notices of Enforcement Discretion

- 0BwOA ENV-4; Earthquake Unit 0; Revision 104
- 1BwOA ENV-4; Earthquake Unit 1; Revision 100
- 2BwOA ENV-4; Earthquake Unit 2; Revision 100
- EP-AA-1001; Radiological Emergency Plan Annex for Braidwood Station; Revision 21
- IR 764738; Unplanned Entry Into 0/1/2BwOA ENV-4 Due to Earthquake; April 18, 2008
- IR 767223; Procedure Enhancements for 0BwOA Env-4; April 24, 2008 [NRC-Identified]
- IR 768709; Internet ESOMS Does Not Display Annotated Log Entries; April 28, 2008 [NRC-Identified]
- Voluntary Event Notification; Press Release Concerning Seismic Event; April 18, 2008

Section 4OA5: Other Activities

- IR 282077; Tracking IR for PWR Sump Blockage Generic Letter and Bulleting; October 29, 2007
- IR 694755; Enhancement to Braidwood Station Labeling Program; November 05, 2007
- ICC-AA-102; Design Input and Configuration Change Impact Screening; Revision 13
- OP-AA-116-101; Equipment Labeling; Revision 11
- 1BWOS TRM 2.5.b.1; Unit 1 Containment Loose Debris Inspection; Revision 1
- 2BWOS TRM 2.5.b.1; Unit 2 Containment Loose Debris Inspection; Revision 2
- CC-AA-205; Control of Undocumented/Unqualified Coatings Inside Containment; Revision 4
- Service Request 53465; Perform Latent Debris Walkdown; November 13, 2007
- BRW-05-0059-M; GSI 191 Post LOCA Debris Generation; September 08, 2006
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- BRW-06-0035-M; NPSHA for RHR and CS Pumps during Post LOCA Recirculation; September 06, 2007
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- BRW-06-0030-S; Evaluation of Auxiliary Steel for Sump Strainer Upper Sizing Restraints; September 07, 2006
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- Q.003.87 748; Large Size Filter Performance Test Specification; December 15, 2005
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- Q.003.84 767; MFTL Chemical Filter Performance Test; June 01, 2006
- 3SA-096.016; CCI Structural Analysis of Strainer and Support Structure; Revision 1
- 3SA-096.018; Head Loss Calculation; November 22, 2006
- Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident"; Revision 3
- Technical Evaluation Report, EGG-NTA-7643, "Conformance to Regulatory Guide 1.97: Byron 1/-2 and Braidwood-1/-2"; March 1989
- Letter dated May 19, 1989, to Mr. Thomas Kovach, Commonwealth Edison Nuclear Licensing Manager, from Stephen Sands, NRC Project Manager, Documenting the Final Technical Evaluation Report and the Safety Evaluation Report Reviewed by the NRC
- TR 08-86, "CRC to Evaluate the Addition of Regulatory Guide 1.97 Components License Training to Familiarize Licensed Personnel"; January 22, 2008
- TR 08-87, "CRC to Evaluate the Addition of Regulatory Guide 1.97 Components License Training to Familiarize Licensed Personnel"; January 22, 2008
- 1BwOSR 3.3.3.1; "Unit One Accident Monitoring Instrumentation Channel Checks"; Revision 11
- IR 688723; "NRC Request for Information on PAM Identification"; October 24, 2007
- IR 709175; "U-2 Accident Monitoring Instruments Missing Identities"; December 8, 2007
- IR 709180; "U-1 Accident Monitoring Instruments Missing Identities"; December 8, 2007
- IR 723753; "URI from NRC Initial License Exam Report (Reg. Guide 1.97)"; January 17, 2008

Other Inspector-Identified Minor Issues

- IR 769737; BRC Identified Security Delay Fencing Left Open; April 30, 2008 [NRC-Identified]
- NRC Nuclear General Employee Training System not Updated in NSMarT System; May 1, 2008 [NRC-Identified]

LIST OF ACRONYMS USED

AC	Alternating Current
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DG	Diesel Generator
DMBW	Dissimilar Metal Butt Weld
DRS	Division of Reactor Safety
EC	Engineering Change Package
ECCS	Emergency Core Cooling System
EPRI	Electric Power Research Institute
ET	Eddy Current
FPP	Fire Protection Program
GL	Generic Letter
IEMA	Illinois Department of Emergency Management
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
ISI	Inservice Inspection
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MRP	Materials Reliability Program
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PBI	Plant Barrier Impairment
PDI	Performance Demonstrated Initiative
PI	Performance Indicator
PT	Penetrant Examination
PWR	pressurized Water Reactor
RCS	Reactor coolant system
RG	Regulatory Guide
RHR	Residual Heat Removal
RWP	Radiation Work Permit
RWST	Refueling Water Storage Tank
SDP	Significance Determination Process
SG	Steam Generator
SX	Essential Service Water
TI	Temporary Instruction
TRM	Technical Requirements Manual
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Examination
WO	Work Order