April 21, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 50-456/03-02; 50-457/03-02

Dear Mr. Skolds:

On March 31, 2003, 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 findings which were discussed on April 11, 2003, with Mr. J. von Suskil and other members of your staff.

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

Based on the results of this inspection, one self-revealing issue that was evaluated under the risk significance determination process as having a very low safety significance (Green) was identified. The NRC has also determined that a violation is associated with this issue. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report.

If you contest the subject or severity of the 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, 801 Warrenville Road, Lisle, IL 60532-4351; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector at the Braidwood facility.

Since the terrorist attacks on September 11, 2001, the NRC has issued two Orders (dated February 25, 2002, and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the February 25th Order. The inspections associated with Temporary Instruction 2515/148 were

completed at the Braidwood Station. Additionally, table-top security drills were conducted at several licensees to evaluate the impact of expanded adversary characteristics and the ICMs on licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For calendar year 2003, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 50-456/03-02; 50-457/03-02
w/Attachment: Supplemental Information

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REGION III

Docket Nos:	50-456; 50-457
License Nos:	NPF-72; NPF-77
Report Nos:	50-456/03-02; 50-457/03-02
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Station, Units 1 and 2
Location:	35100 S. Route 53 Suite 84 Braceville, IL 60407-9617
Dates:	January 1 through March 31, 2003
Inspectors:	S. Ray, Senior Resident Inspector N. Shah, Resident Inspector D. Funk Jr., Physical Security Inspector D. Nelson, Radiation Specialist R. Skokowski, Senior Resident Inspector, Byron T. Tongue, Reactor Engineer
Observers:	C. Roque-Cruz, Reactor Inspector P. Smith, Illinois Department of Nuclear Safety
Approved by:	Ann Marie Stone, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000456/2003-002, 05000457/2003-002; Exelon Generation Company, LLC; on 01/01-03/31/03, Braidwood Station; Units 1 & 2. Operability Evaluations.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections on radiation protection and physical security. The inspections were conducted by Region III inspectors, and the resident inspectors assigned to the Braidwood and Byron sites. One Green finding, which was also determined to involve a violation of Nuclear Regulatory Commission (NRC) requirements, was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the Significance Determination Process does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-revealed Findings

Cornerstone: Barrier Integrity

Green. A finding of very low safety significance was identified through a self-revealing event when the licensee failed to incorporate the correct instantaneous current trip setpoint following maintenance and replacement of a safety-related, motor operated valve's molded case circuit breaker. This was a recurrent issue based on similar problems occurring in September 2001 and February 2002, and thus was related to the cross-cutting area of problem identification and resolution.

This finding was considered more than minor, because it affected the availability of the 1B and 1D reactor containment fan coolers, which mitigate containment temperature and pressure increases following a design basis accident, and thus could affect the integrity of the containment barrier. The finding was of very low safety significance because it did not represent an actual reduction of the atmospheric pressure control function of the reactor containment because redundant equipment was available and the breaker could have been rapidly reset. The inspectors identified a Non-Cited Violation for the inadequate corrective action from a previous event. (Section 1R15)

B. Licensee-Identified Violations

No findings of significance were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power throughout most of the inspection period, except that power was briefly reduced to about 84 percent on January 12, 2003, for turbine steam valve testing. On March 17, 2003, Unit 1 started a gradual coastdown toward a scheduled refueling outage. Power had reached about 94 percent by the end of the inspection period.

On February 2, 2003, the licensee sought and was granted a Notice of Enforcement Discretion (NOED) to permit continued operation past the Limiting Condition of Operation time stated in Technical Specification (TS) 3.5.2. The licensee requested the NOED in order to complete repairs to the 1B residual heat removal (RH) pump.

Unit 2 operated at or near full power throughout the inspection period, except that power was briefly reduced to about 86 percent on February 16, 2003, for turbine steam valve testing, and power was briefly reduced to about 90 percent on March 2, 2003, for load following.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns of the accessible portions of trains of risk significant mitigating system equipment. These walkdowns were performed when the redundant trains or other related equipment were unavailable due to planned or emergent maintenance. The inspectors utilized the valve and electric breaker checklists listed in the Attachment to verify that the components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors reviewed outstanding work orders (WOs) and condition reports (CRs) associated with the train to verify that those documents did not reveal issues that could affect train function. The inspectors used the information in the appropriate sections of the TS and the Updated Final Safety Analysis Report (UFSAR) to determine the functional requirements of the system.

The inspectors verified alignment of the following trains:

- the 1B essential service water (SX) train on January 6, 2003;
- the 1B chemical and volume control (CV) train on January 13, 2003;
- the 1A RH train on January 28, 2003; and
- the 1A safety injection (SI) train on February 4, 2003.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

During the week ending March 21, 2003, the inspectors conducted a system alignment inspection of the Unit 1 CV system. This system was selected because it plays an important mitigating system role and also includes aspects of initiating events and barrier integrity. The inspection consisted of the following activities:

- a walkdown of the system in the auxiliary building using the mechanical and electrical lineup checklist to verify proper alignment, component accessibility, availability, and current condition;
- a review of recent CRs to verify that there were no current operability concerns;
- a review of open WOs to verify that there were no conditions impacting availability and that deficiencies had been identified;
- a selective review of temporary and permanent modifications installed on the system within the last two years; and
- a selective review of system abnormal operating procedures to verify whether system alignment was properly controlled.

Documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Fire Protection Walkdowns

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of fire fighting equipment, the control of transient combustibles and ignition sources, and on the condition and operating status of installed fire barriers. The inspectors selected fire areas for inspection based on their overall contribution to internal fire risk, as documented in the Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate a plant transient, or their impact on the plant's ability to respond to a security event. The inspectors used the documents listed in the Attachment to verify 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 that fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors verified that

minor issues identified during the inspection were entered into the licensee's corrective action program.

The following areas were inspected by walkdowns:

- the 1A and 2A SX pump rooms on January 8, 2003;
- the 1A CV pump room on January 15, 2003;
- the 1B RH pump room on January 29, 2003;
- the 1A SI pump room on February 4, 2003;
- the 1A containment spray pump room on February 11, 2003;
- the 1A and 1B diesel generator rooms on February 20, 2003;
- the 2A and 2B diesel generator rooms on February 20, 2003;
- the 1B and 2B SX pump rooms on February 25, 2003; and
- the 1A RH pump room on March 13, 2003.

b. Findings

No findings of significance were identified.

.2 Fire Drill Observation

a. Inspection Scope

On March 12, 2003, the inspectors observed the licensee's response to a simulated fire on the Unit 1 turbine generator and exciter. The inspectors chose to observe this scenario because an actual turbine fire would likely result in a turbine trip initiating event. Prior to the drill, the inspectors performed a walkdown of the simulation with the licensee's Fire Marshall to identify the specific hazards and the drill objectives to be addressed by the fire brigade. The inspectors also performed a walkdown of the appropriate fire brigade storage cage to verify that the fire fighting equipment was properly maintained. During the drill, the inspectors observed the following specific aspects of the fire brigade response:

- the fire brigade responded in a timely manner upon being notified of the fire;
- the brigade members' protective equipment was in good working order and was properly donned;
- fore hoses were properly laid out, charged and tested prior to entering the fire area of concern;
- fire fighting equipment was properly staged and used; and
- the fire brigade leader maintained appropriate command and control and had good radio communications with the responders.

The inspectors also attended the post-drill critique to determine whether the pre-planned drill scenario was appropriately followed and whether the specific drill acceptance criteria were met. Documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

During the week of March 10, 2003, the inspectors evaluated the licensee's controls for mitigating external and internal flooding. Specifically, the inspectors performed the following:

- reviewed the licensee's design basis documents to identify the design basis for flood protection and to identify those areas susceptible to external or internal flooding;
- reviewed the licensee's probabilistic risk assessment results for external and internal flooding;
- reviewed selected maintenance records based on the assessment results;
- reviewed selected abnormal operating procedures for identifying and mitigating flooding events;
- reviewed selected maintenance records and surveillances for auxiliary building floor drains; and
- inspected the watertight doors and flood seals on March 13 and 14, 2003.

The inspectors also reviewed selected shift control room log entries and CRs to determine whether identified problems were being properly addressed via the licensee's corrective actions program. Documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

Quarterly Review of Requalification Testing and/or Training Activities

a. Inspection Scope

On January 15, 2003, the inspectors observed an operating crew during an "out-of-the-box" requalification examination on the simulator using the scenario listed in the Attachment. The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications;
- ability to take timely actions in the safe direction;
- prioritization, interpretation, and verification of alarms;
- procedure use;
- control board manipulations;

- oversight and direction from supervisors; and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the Exelon procedures listed in the Attachment.

The inspectors verified that the crew completed the critical tasks listed in the simulator guide. The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed the licensee evaluators to verify that they also noted the issues and discussed them in the critique at the end of the session. The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's overall maintenance effectiveness for risk-significant mitigating systems. This evaluation consisted of the following specific activities:

- observing the conduct of planned and emergent maintenance activities where possible;
- reviewing selected CRs, open WOs, and control room log entries in order to identify system deficiencies;
- reviewing licensee system monitoring and trend reports; and
- a partial walkdown of the selected system.

The inspectors also reviewed whether the licensee properly implemented the Maintenance Rule, 10 CFR 50.65, for the system. Specifically, the inspectors determined whether:

- the system was scoped in accordance with 10 CFR 50.65;
- performance problems constituted maintenance rule functional failures;
- the system had been assigned the proper safety significance classification;
- the system was properly classified as (a)(1) or (a)(2); and
- the goals and corrective actions for the system were appropriate.

The above aspects were evaluated using the maintenance rule program and other documents listed in the Attachment. The inspectors also verified that the licensee was appropriately tracking reliability and/or unavailability for the systems.

The inspectors reviewed the following systems:

- the component cooling system on February 10, 2003; and
- the SX system on March 3, 2003.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's management of plant risk during emergent maintenance activities or during activities where more than one significant system or train was unavailable. The activities were chosen based on their potential impact on increasing the probability of an initiating event or impacting the operation of safety-significant equipment. The inspections were conducted to verify that evaluation, planning, control, and performance of the work were done in a manner to reduce the risk and minimize the duration where practical, and that contingency plans were in place where appropriate.

The licensee's daily configuration risk assessments records, observations of operator turnover and plan-of-the-day meetings, and the documents listed in the Attachment were used by the inspectors to verify that the equipment configurations were properly listed, that protected equipment were identified and were being controlled where appropriate, and that significant aspects of plant risk were being communicated to the necessary personnel. The inspectors verified that the licensee controlled emergent work in accordance with the expectations in the procedures listed in the Attachment.

In addition, the inspectors reviewed selected issues that the licensee entered into its corrective action program, including minor issues identified by the inspectors, to verify that identified problems were being entered into the program with the appropriate characterization and significance.

The inspectors reviewed the following activities:

- planned maintenance on the 1A SX train during an auxiliary feedwater flow loop calibration on January 6, 2003;
- planned maintenance on the 1A CV train coincident with planned maintenance on the 1A and 1C reactor containment fan coolers (RCFCs) on January 13, 2003;
- planned maintenance on the 1B RH pump coincident with unplanned maintenance on the 0B train of control room ventilation on January 27, 2003;
- activities associated with an NOED to continue work on the 1B RH pump past the TS Limiting Condition for Operation time limit on February 2, 2003;
- planned maintenance on the 1A SI pump and the 1A and 1C RCFCs on February 5, 2003;

- planned maintenance on the 1A containment spray pump in conjunction with planned maintenance on all four auxiliary building supply fans on February 11, 2003;
- planned maintenance on the 1B SX pump in conjunction with planned maintenance on the auxiliary building ventilation supply fans on February 25, 2003; and
- planned maintenance on the 2A containment chiller bypass isolation valve 2SX147A on March 3 and 4, 2003.

On February 2, 2003, the licensee requested and was granted an NOED to continue work on the 1B RH pump past the Limiting Condition of Operation time stated in TS 3.5.2. During this period, the inspectors verified that the licensee had taken the required compensatory actions as stated in the licensee's formal, written request for the NOED dated February 4, 2003. Specifically, the inspectors observed the licensee's control of protected equipment; reviewed operator logs, and monitored control room and 1B RH pump work activities.

b. Findings

No findings of significance were identified.

With respect to the NOED, the inspectors will review the circumstances which caused the licensee to pursue the NOED. This is considered an Unresolved Item (URI 50-456/03-01). Additional information regarding this issue is discussed in Section 4OA5.2 of this report.

1R14 Personnel Performance Related to Non-routine Plant Evolutions and Events (71111.14)

a. Inspection Scope

On March 26, 2003, Unit 2 experienced a series of small reactor power excursions due to problems with level control in the 2B moisture separator reheater shell drain tank. The inspectors verified that operator response to the first excursion had been timely and in accordance with procedures by review of control room logs and discussions with operators. The inspectors also observed control room and plant operator response to subsequent excursions.

The inspectors verified that reactor power had been reduced to slightly below the licensed power limit in case there were additional transients, that operators had diagnosed the cause of the transients, and that level control in the 2B shell drain tank had been stabilized by using the emergency level control valve. The inspectors attended meetings of the troubleshooting team evaluating the cause and corrective actions for the problems. The inspectors reviewed plant computer charts to verify that NRC guidance on maintaining reactor power within the steady state licensed power level had not been exceeded. Finally, the inspectors observed plant operators recovering the level control system back to normal on March 27, 2003.

This transient was considered a non-routine plant evolution because multiple simultaneous problems with the shell drain tank level control system made identification,

diagnosis, and control of the problems difficult, and because failure to gain control of the level in a timely manner could have resulted in a rapid power reduction or trip transient. The system experienced simultaneous failures of the 2B moisture separator reheater shell drain tank normal level control valve, emergency level control valve, high level alarm, and high/high level alarm. Documents reviewed as part of this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors evaluated plant conditions and selected CRs for risk-significant components and systems in which operability issues were questioned. These conditions were evaluated to determine whether the operability of components was justified. The inspectors compared the operability and design criteria in the appropriate section of the and UFSAR to the licensee's evaluations presented in the CRs and documents listed in the Attachment to verify that the components or systems were operable. The inspectors also conducted interviews with the appropriate licensee system engineers to obtain further information regarding operability questions.

The inspectors reviewed the following operability evaluations and conditions:

- CR 140853 regarding whether TS required an adequate level in the condensate storage tanks to meet actual conditions during a shutdown and cooldown;
- CR 144947 regarding the trip setpoint on the breaker for valve 1SX016B;
- a question regarding whether the safety injection pumps could be considered operable during the time period when they were being used to fill an accumulator; and
- actions taken with regard to an Information Notice and Part 21 Notification on inadequately staked capscrews on RH pumps.

b. Findings

Introduction: A finding of very low safety significance (Green) and Non-Cited Violation (NCV) was identified through a self-revealing event for inadequate corrective actions following the replacement of the electrical breaker for motor-operated valve 1SX016B. The finding affected the reliability of the 1B and 1D RCFCs which are used to limit containment temperature and pressure following a design basis accident.

Description: On February 18, 2003, the operators were performing a quarterly stroke test of valve 1SX016B in accordance with Braidwood operating surveillance requirement procedure 1BwOSR 5.5.8.SX-1B, "Essential Service Water Train B Valve Stroke Quarterly Surveillance," Revision 5. This valve is the SX inlet valve for the 1B and 1D RCFCs. The valve failed to stroke in the open position during testing.

The licensee determined that the instantaneous current trip setpoint had been incorrectly set following the replacement of the valve's breaker on August 27, 2002. This setpoint was designed to trip the breaker if the in-rush current immediately following valve operation was too high (i.e., locked rotor). The valve was successfully stroke tested following the valve replacement and during the first quarterly stroke test on November 25, 2002. However, the valve failed its second quarterly stroke test as stated above.

The licensee had similar problems (i.e., incorrect setpoint) with motor operated valves on September 10, 2001 and on February 25, 2002. These events were discussed in Section 1R19 of NRC Inspection Report 50-456/457/02-05. As stated in that report, it was possible for the instantaneous trip setpoint error band to overlap into the range of in-rush current experienced when the valve was operating normally. This meant that the valve could be successfully stroked depending on the normal variance in electrical bus voltage. This variance was not accounted for in the licensee's stroke test. After the September 2001 event, the licensee had identified numerous valves that required a setpoint revision. However, the licensee had failed to correct the setpoints on all of the identified breakers during subsequent valve breaker maintenance, resulting in the February 2002 and 2003 events.

Analysis: The inspectors determined that the failure to use the correct setpoint for the 1SX016B breaker was a performance deficiency warranting a significance evaluation in accordance with Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued on April 29, 2002. This finding was considered more than minor, because it affected the availability of the 1B and 1D RCFCs which mitigate containment temperature and pressure increases following a design basis accident and thus could affect the integrity of the containment barrier. The inspectors determined that this event also affected the cross-cutting area of Problem Identification and Resolution, because of the failure to take adequate corrective actions following two prior events in September 10, 2001, and February 25, 2002.

The inspectors completed a significance determination of this issue, using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 30, 2002, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," dated March 18, 2002. For the Phase 1 screening, the inspectors answered "No" to all three questions under the containment barrier cornerstone. The finding did not represent an actual reduction of the atmospheric pressure control function of the reactor containment because redundant equipment was available and the breaker could have been rapidly reset. Therefore, the event was considered of very low safety significance (Green). The finding was assigned to the Barrier Cornerstone for Unit 1.

Enforcement: Criterion XVI of 10 CFR Part 50, Appendix B, requires measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to the above, the licensee failed to use the correct instantaneous current trip setpoint for the 1SX016B valve, after identifying that the existing setpoint was incorrect as a result of two earlier similar events on September 10, 2001 and on February 25, 2002. This is considered a violation. However, this violation is associated with an inspection finding that is characterized by

the Significance Determination Process as having very low risk significance (i.e., Green) and is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 50-456/03-02-02). This violation is in the licensee's corrective action program as CR 144947, "Repeat Maintenance–1SX016B Breaker Tripped on Open Signal," dated February 18, 2003.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

On February 27, 2003, the inspectors accompanied a non-licensed operator performing a routine walkdown of the Unit 1 Turbine building. Specifically, the inspectors observed the operator's activities to determine if any impediments existed that may constitute an operator workaround or challenge as defined by the licensee procedures listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the post maintenance testing activities associated with maintenance or modification of important mitigating, barrier integrity, and support systems to ensure that the testing adequately verified system operability and functional capability with consideration of the actual maintenance performed. The inspectors used the appropriate sections of the TS and UFSAR, as well as the documents listed in the Attachment, to evaluate the scope of the maintenance; to verify that the post maintenance testing was performed adequately and demonstrated that the maintenance was successful; and to verify that operability was restored. The inspectors verified that minor issues identified during the inspection were entered into the licensees corrective action system.

Testing subsequent to the following activities was observed and evaluated:

- planned maintenance on the 1B RH pump on February 3, 2003;
- planned maintenance on the 1A SI pump on February 5, 2003;
- planned maintenance on the 1A containment spray pump on February 11, 2003;
- planned maintenance on the 1B SX pump on February 25, 2003;
- planned maintenance on valve 1FW035B on March 20, 2003; and
- planned maintenance on auxiliary feedwater pump room cooling fan 2VA00CA on March 21, 2003.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors witnessed selected surveillance testing and/or reviewed test data to verify that the equipment tested using the surveillance procedures met the TS, the UFSAR, and licensee procedural requirements, and demonstrated that the equipment was capable of performing its intended safety functions. The activities were selected based on their importance in verifying mitigating systems capability and barrier integrity. The inspectors used the documents listed in the Attachment to verify that the testing met the frequency requirements; that the tests were conducted in accordance with the procedures, including establishing the proper plant conditions and prerequisites; that the test acceptance criteria were met; and that the results of the tests were properly reviewed and recorded.

The following tests were observed and evaluated:

- local leak rate testing of Unit 2 service air valves 2SA032 and 2SA033 on January 9, 2003;
- Unit 1 reactor coolant system resistance temperature detector alignment on January 17, 2003;
- testing of the 2B solid state protection system on January 30, 2003;
- local leak rate testing of the Unit 2 containment miniflow purge supply and exhaust penetrations;
- monthly testing of the 1B diesel generator on March 5, 2003; and
- once per 18 months testing of the bypassing of automatic trips on the 1B diesel generator on March 19, 2003.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

On January 15, 2003, the inspectors reviewed a temporary maintenance alteration to install a freeze seal isolation on the component cooling water supply to the Unit 2 spent fuel pool heat exchanger. This activity was chosen because a significant problem with the freeze installation could have resulted in a loss of Unit 2 component cooling which would have resulted in a reactor shutdown transient due to the loss of cooling water flow to the Unit 2 reactor coolant pump thermal barrier heat exchangers. The freeze seal was performed to support maintenance and was intended to be in place for less than 90 days, so a formal safety evaluation was not required.

The licensee had unsuccessfully attempted to establish a freeze seal in this same location on October 8, 2002. The inspector's review of that attempt was documented in Inspection Report 50-456/457/02-07, Section 1R23.

The inspectors reviewed the WO for the job, including the lessons learned from the October 8, 2002, freeze attempt, the engineering review for the installation, the engineering change to the original review to allow the work to be accomplished during plant operations, and the plant barrier impairment permits. The inspectors also walked down the piping where the freeze was to be installed before the work began, attended the high level awareness briefing, and observed portions of the work. In addition, the inspectors reviewed the operations contingency plan for potential failure of the freeze and attended shift turnover meetings where the contingencies were discussed. Finally, the inspectors verified that the operations temporary change tracking log was used to record the temporary change as required.

The inspectors verified that problems identified by the licensee during the freeze installation were entered into the corrective action system. As part of this inspection, the inspectors reviewed the documents listed in the Attachment.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On January 15, 2003, the inspectors observed an operating crew during an "out-of-the-box" requalification examination on the simulator using the scenario listed in the Attachment. This drill contained opportunities which the licensee had determined would count toward the Drill and Exercise Performance Indicator statistics. The inspectors ensured that the classification and notification opportunities had been predetermined and that adequate timing and success criteria had been established. The inspectors reviewed the licensee's emergency plan implementation procedures to ensure that the proper classifications had been determined. The inspectors observed the scenario and the post-scenario critique to ensure that operator performance in emergency response had been properly assessed by the licensee evaluators.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control (71121.01)

Plant Walkdowns, Radiological Boundary Verifications, and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors conducted walkdowns of the radiologically restricted area to verify the adequacy of radiological boundaries and postings. Specifically, the inspectors walked down several radiation and high radiation area boundaries in the auxiliary, radwaste, and fuel handling buildings. Confirmatory radiation measurements were taken to verify that these areas were properly posted and controlled in accordance with 10 CFR Part 20, licensee procedures, and TSs. The radiation work permit for NRC general tours was reviewed for electronic dosemeter alarm set points and protective clothing requirements.

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 Offsite Dose Calculation Manual (ODCM)

a. Inspection Scope

The inspectors reviewed the Radioactive Effluent Release Report for the year 2001, to verify that the radiological effluent program was implemented as described in the UFSAR and the ODCM. The inspectors reviewed changes made by the licensee to the ODCM as well as to the liquid and gaseous radioactive waste processing system design, procedures, or operation since the last inspection to verify that changes were documented in accordance with the requirements of the ODCM and the TSs.

b. Findings

No findings of significance were identified.

.2 Gaseous and Liquid Release Systems Walkdowns

a. Inspection Scope

The inspectors performed walkdowns of the major components of the gaseous and liquid release systems to verify that the current system configuration was as described in the UFSAR and the ODCM, and to observe ongoing activities and equipment material condition. This included radiation and flow monitors, demineralizers and filtration systems, compressors, tanks, and vessels. The inspectors also discussed the waste processing system operations and components with the cognizant system engineer to assess its overall operation.

b. Findings

No findings of significance were identified.

.3 Gaseous and Liquid Releases

a. Inspection Scope

The inspectors reviewed liquid and gaseous radioactive waste release records including radiochemical measurements to verify that appropriate treatment equipment was used, and that the radwaste effluents were processed and released in accordance with the ODCM. The inspector also verified that radioactive releases met the 10 CFR Part 20 requirements.

The inspectors reviewed the records of any releases made with inoperable effluent radiation monitors. The inspectors reviewed the licensee's actions for those releases to ensure an adequate defense-in-depth was maintained against an unmonitored release of radioactive material to the environment.

b. Findings

No findings of significance were identified.

.4 Dose Calculations

a. Inspection Scope

The inspectors reviewed selected individual gaseous and liquid batch release records for the year 2002, the Annual Radiological Environmental Operating Report and the Radioactive Effluent Release Report for the year 2001, and years 2001 and 2002 monthly dose calculations to ensure that the licensee had properly determined the offsite dose to the public from radiological effluent releases, and to determine if any annual TS or ODCM (i.e., Appendix I to 10 CFR Part 50 values) limits were exceeded.

b. Findings

No findings of significance were identified.

.5 Air Cleaning Systems

a. Inspection Scope

The inspectors reviewed the most recent air cleaning system surveillance test results for containment purge, and the radwaste and auxiliary buildings exhaust ventilation systems activated carbon beds to ensure that test results were within the licensee's acceptance criteria. The inspectors also reviewed surveillance test results for the gaseous release systems to verify that the flow rates were consistent with UFSAR values.

b. Findings

No findings of significance were identified.

.6 Effluent Monitor Calibrations

a. Inspection Scope

The inspectors reviewed calibration records of liquid and gaseous point of discharge effluent radiation monitors to verify that instrument calibrations were within the required calibration frequency. The inspector also reviewed the current effluent radiation monitor alarm setpoint values for agreement with station requirements.

b. Findings

No findings of significance were identified.

.7 Counting Room Instrument Calibrations and Quality Control

a. Inspection Scope

The inspector reviewed the quality control records for radiochemistry instrumentation used to identify and quantitate radioisotopes in effluents, in order to verify that the instrumentation was calibrated and maintained as required by station procedures. This review included calibrations of gamma spectroscopy/spectrometry systems, liquid scintillation instruments, proportional counters, and associated instrument control charts. The inspectors also reviewed the lower limit of detection determinations to verify that the radiochemical instrumentation and analysis conditions used for effluent analysis could meet the ODCM detection requirements.

b. Findings

No findings of significance were identified.

.8 Interlaboratory Comparison Program

a. Inspection Scope

The inspector reviewed the results of the year 2001 Interlaboratory Comparison Program along with the 2002 Radiochemistry Cross Check Program (Section .7) in order to evaluate the licensee's capability to perform radiochemical measurements, and to assess the quality of radioactive effluent sample analyses performed by the licensee. The inspectors reviewed the licensee's quality assurance evaluation of the Interlaboratory Comparison Program and associated corrective actions for any deficiencies identified.

b. Findings

No findings of significance were identified.

.9 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed audits, self-assessments, and condition reports generated in 2002 to evaluate the effectiveness of the licensee's self-assessment process in the identification, characterization, and prioritization of problems, and to verify that previous radiological instrumentation and effluent related issues were adequately addressed. Condition reports that addressed radioactive treatment and monitoring program deficiencies were also reviewed to verify that the licensee had effectively implemented the corrective action program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

Cornerstones: Mitigating Systems and Occupational Radiation Safety

.1 Reactor Safety Strategic Area

a. Inspection Scope

The inspectors reviewed documents listed in the Attachment to verify that the licensee had corrected reported performance indicators data, in accordance with the criteria in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2. The following performance indicators were reviewed for the period of January 1, 2002, through December 31, 2002:

- unplanned scrams per 7000 critical hours and
- safety system unavailability, RH system.

b. Findings

No findings of significance were identified.

.2 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors reviewed documents listed in the Attachment to verify that the licensee had corrected reported performance indicators data, in accordance with the criteria in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2. The following performance indicator was reviewed:

- Public Radiation Safety

Since no reportable elements were identified by the licensee for the 4th quarter of 2001 and 1st, 2nd and 3rd quarters of 2002 and, the inspectors reviewed the licensee's data to verify that there were no occurrences concerning the public radiation safety cornerstone during those quarters.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

.1 Cross-References to Problem Identification and Resolution Findings Documented Elsewhere

Section 1R15 discussed a NCV associated with a finding of very low safety significance (Green) for inadequate corrective actions following the replacement of the electrical breaker for motor-operated valve 1SX016B. This was a recurrent issue since similar problems (with similar breakers) had occurred in September 2001 and February 2002.

.2 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As 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 corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the licensee's corrective action system as a result of inspectors' observations are generally denoted in the report or in the documents in the Attachment.

b. Findings

No finding of significance were identified.

.3 Annual Sample Review

Extent of Condition Review for Previous Violation

Introduction

Throughout the inspection period, the inspectors reviewed the licensee's extent of condition investigation committed to in its letter from James D. von Suskil, "Revised Response to a Notice of Violation," dated August 19, 2002. This letter was written in response to Violation 50-456/457/01-11-02 discussed in Inspection Report 50-456/457/01-11, Section 1R22. In the letter, the licensee stated that it would "review design and safety analysis that formed the basis for TS values and have TS values as input parameters," to "identify changes to TS input parameters and confirm that the changes have been properly implemented in surveillance and/or analysis, preserving the necessary margin to account for uncertainly in measurement of the changed parameters." Documents reviewed as part of this inspection are listed in the Appendix.

a. Effectiveness of Problem Identification

(1) Inspection Scope

The inspectors reviewed the CR Action Tracking Items associated with the issue and verified that the licensee conducted a complete review of all TS values, determined which values were used as inputs to design calculations, determined which TS or design calculations had changed since original licensing, and determined whether these changed values preserved the necessary margin with appropriate allowance for measurement uncertainty.

(2) Issues

The licensee limited its detailed review to only those TS parameters for which either the TS had changed or the design calculation had changed since original licensing. The licensee's position was that the original TS and UFSAR parameters had sufficient margin for measurement uncertainty, either specifically discussed in the analysis, or implicitly assumed. The inspectors reviewed a sampling of the TS parameters which the licensee placed in this category and verified that most had margin for measurement uncertainty specifically discussed in the UFSAR and/or the associated NRC's Safety Evaluation Report. In addition, the inspectors noted that NRC Inspection Manual, Part 9900, stated that "the TS limits are established with allowance for measurement tolerances already incorporated." The inspectors did identify one design calculation for which the associated TS parameters may not have had sufficient measurement tolerance incorporated as discussed below.

The paragraph entitled “Inadvertent Spray Actuation,” of Section 6.2.1.1.3 of the UFSAR stated that a calculation was performed to calculate the maximum outside to inside pressure differential of the containment following an inadvertent actuation of the containment spray system. A similar statement is contained in the Basis for TS 3.6.4, and in Section 6.2.1.1 of the Safety Evaluation Report. The calculation apparently showed that the maximum containment differential pressure would be 3.48 pounds per square inch (psi) compared to a design differential of 3.5 psi. However, the documents indicate that an initial containment differential pressure of 0.0 psi was used as the input parameter for the calculation. Technical Specification 3.6.4 allows a containment differential pressure of as low as -0.1 psi (outside to inside). The inspectors were concerned that, if the initial containment pressure was at the minimum allowed at the beginning of the transient, containment outside to inside design differential pressure could be exceeded, especially since measurement uncertainty could result in an even more negative initial pressure.

The licensee could not find the original calculation to verify whether additional measurement uncertainty was included in the design calculation. The licensee issued CR 151931 which included an action to reconstruct the calculation. The inspectors had no immediate safety concern since; 1) the NRC’s original Safety Evaluation Report stated that the initial conditions in the calculation were conservatively assumed and were acceptable, even though measurement uncertainty was not explicitly mentioned; 2) the licensee’s initial review of this issue indicated that the containment may be able to withstand a significantly higher outside to inside differential pressure than 3.5 psi; 3) the other input parameters of the highest allowed TS values of initial containment temperature and humidity and the lowest allowed TS value of containment spray temperature did not exist at the time of the inspection and would be unlikely to ever occur simultaneously; and 4) a containment failure due to inadvertent containment spray actuation, even if it were to occur, would not result in a significant release to the public unless an accident resulting in a release into containment preceded it. In that case, the containment differential pressure would probably be significantly above the initial condition apparently assumed in the analysis.

The licensee reviewed 120 separate TS parameters and identified a total of 7 parameters that were changed by TS amendments and for which the amendment application did not specifically address measurement uncertainty. Four of those TSs had been amended in such a way that the margin to the design calculations had either not changed or had actually increased over the original values. Three of the TSs had been changed in such a way that the margin to the design calculations had been reduced or eliminated. For those three, the licensee could not identify any discussion of margin for measurement uncertainly in the amendment requests. The three TSs, along with the CRs written to evaluate them, were as follows:

- TS 3.9.5.1 for minimum RH flow in Mode 6, addressed in CR 151545;
- TS 3.7.1.1 for main steam safety valve setpoints, addressed in CR 151550; and
- TS 3.1.4.3 for control rod drop time, addressed in CR 151553.

The inspectors concluded that the licensee's extent of condition review was sufficiently complete and detailed that problems similar to the violation discussed above would be identified.

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

For the missing design calculation and the three TS margin questions discussed above, the inspectors verified, through review of the CRs, other documents, and discussions with licensee engineering personnel, that no immediate safety concerns existed. The inspectors determined that the licensee had entered the issues into its corrective action system at the appropriate level, that the licensee had sufficiently addressed immediate operability questions, and that actions to evaluate and resolve the issues in a timely manner were underway.

(2) Issues

No significant issues were identified.

4OA5 Other

.1 (Closed) Unresolved Item (URI) 50-456/457/00-11-02: Failure to Provide Adequate Procedural Requirements. The unresolved item involved a change in security plan language of Revision 47 that added a new requirement allowing the transfer of searched material/equipment between protected areas at different sites. The language of the plan change did not adequately describe the methodology relating to the transportation of secure (searched) materials being transported from a licensee site to another licensee site. The wording was modified in Revision 50 of the licensee's security plan. No violation of NRC requirements occurred.

.2 (Closed) URI 50-456/03-02-01: Circumstances Leading to a NOED for the 1B RH Pump. Concerning the inspection of the NOED on the 1B RH pump discussed in Section 1R13 of this report, the issue was considered a URI for tracking purposes pending the inspectors' review of the circumstances which led to the need for enforcement discretion. On March 31, 2003, the inspectors completed that review, including the documents listed in the Attachment, and determined that no violations of NRC requirements occurred. Therefore, the URI is closed.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. J. von Suskil and other members of licensee management at the conclusion of the inspection on April 11, 2003. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

The results of the radiation protection inspection were presented to Mr. J. von Suskil at the conclusion of the inspection on January 10, 2003. The inspectors did not receive any information identified as proprietary during this inspection

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. von Suskil, Site Vice President
T. Joyce, Plant Manager
J. Bailey, Regulatory Assurance - NRC Coordinator
G. Baker, Site Security Manager
R. Blaine, Radiation Protection Manager
G. Dudek, Operations Manager
C. Dunn, Site Engineering Director
R. Gilbert, Nuclear Oversight Manager
B. Stoffels, Maintenance Manager

United States Nuclear Regulatory Commission

M. Chawla, Project Manager, Office of Nuclear Reactor Regulation
A. Stone, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

50-456/03-02-01	URI	Circumstances Leading to a NOED for the 1B RH Pump (Section 4OA5.2)
50-456/03-02-02	NCV	Failure of Valve to Stroke to the Open Position During Testing (Section 1R15)

Closed

50-456/457/00-11-02	URI	Failure to Provide Adequate Procedural Requirements (Section 4OA5.1)
50-456/03-02-01	URI	Circumstances Leading to a NOED for the 1B RH Pump (Section 4OA5.2)
50-456/03-02-02	NCV	Failure of Valve to Stroke to the Open Position During Testing (Section 1R15)

Discussed

50-456/457/01-11-02	VIO	Failure to Maintain an Adequate Test Control Program (Section 4OA2.3)

LIST OF DOCUMENTS REVIEWED

1R04 Equipment Alignment

BwOP RH-E1; Electrical Lineup - Unit 1 Residual Heat Removal System Operating Electrical Lineup; Revision 4

BwOP RH-M1; Operating Mechanical Lineup Unit 1 1A Train; Revision 10

BwOP SX E1; Electrical Lineup - Unit 1 Essential Service Water Essential Service Water System Operating; Revision 6

BwOP SX-M1; Operating Mechanical Lineup Unit 1; Revision 20

BwOP CV-M; Operating Mechanical Lineup Unit 1; Revision 16

BwOP CV-E!; Electrical Lineup–Unit 1 Operating; Revision 6

BwOP CV-1; Startup of the Chemical and Volume Control System; Revision 12

1BwOA ESP-2; Reestablishing Chemical and Volume Control Letdown During Abnormal Conditions Unit 1; Revision 0

1BwOA PRI-15; Loss of Normal Charging Unit 1; Revision 0

1BwOA PRI-2; Emergency Boration Unit 1; Revision 58

1BwOA RCP-2; Loss of Seal Cooling Unit 1; Revision 55

System Health Overview Report for the Chemical and Volume Control System; February 2003

List of Open Work Requests on the Unit 1 Chemical and Volume Control System; March 21, 2003

WO 99161824-01; Unit 1 Primary Containment Integrity Verification of Isolation Devices Inside Containment; October 2, 2001

WO 00539675-01; Unit 1 Primary Containment Integrity Verification of Isolation Devices Outside Containment; February 26, 2003

WO 00539664-01; Unit 1 Emergency Core Cooling System Venting and Valve Alignment Surveillance; February 21, 2003

Engineering Change 42497-001; Install Vent Valve on Suction of 2B Chemical and Volume Control Charging Pump; July 13, 2001

CR 134340; Discoloration/Corrosion of Components from Boric Acid Contamination ; December 05, 2002

CR 132844; Delay in Exiting 1B Chemical and Volume Control Pump Limiting Condition for Operation Action Requirement; November 21, 2002

CR 143584; Boron Accumulation on 2CVl231; February 7, 2003

CR 142513; Low SX Flow to 1B Chemical and Volume Control Pump Cubicle Cooler (Unplanned Limiting Condition for Operation); February 2, 2003

CR 139440; 1CV110A Has Active Borated Water Leak/Steel Discolored; January 13, 2003

CR 125603; Non-Conformance Reports Corrective Actions Not Implemented for Heat Exchangers; October 2, 2002

CR 118127; 2B Chemical and Volume Control Pump Gear Drive Oil Pressure Below Operator Rounds Specification; August 4, 2002

CR 127651; Preconditioning Resolution for 1CV8111; October 16, 2002

CR 149030; 1CV8542/1CV8146 DC Fuse Labels are Incorrect in 1DC13J; March 13, 2003 [NRC-Identified]

Byron CR 131171; Loss of Flow on the 2B Chemical and Volume Control Pump; November 11, 2002

1R05 Fire Protection

Fire Drill Scenario 20.2.21.03; Unit 1 Turbine Bearing; February 21, 2003

Byron/Braidwood Fire Protection Report; Revision 20

OP-AA-201-109; Control of Transient Combustible Material; Revision 02

Braidwood Station Pre-Fire Plans

CR 149943; NRC Questions and/or Concerns; March 20, 2003 [NRC-Identified]

CR 139018 (A9810CAP); Equipment in Use Since April 11, 1997; January 10, 2003 [NRC-Identified]

CR 140514 (A8950CAP); Identified Penetrations Not Shown on Related Documents; January 16, 2003

CR 144000; Nonconforming Mechanical Maintenance Department Hot Work Area; February 11, 2003 [NRC-Identified]

CR 145436; Flood Barrier Blocked With Hoses Stacked on FS1-1; February 13, 2003 [NRC-Identified]

CR 146685; Oil Tanker Left in Switchyard After Work Performed; February 27, 2003 [NRC-Identified]

CR 148777; Extent of Condition Review Identified Further Actions Needed; March 12, 2003

OP-AA-201-009; Exelon Nuclear Control of Transient Combustible Material; Revision 2

1R06 Flood Protection Measures

CR 111461; Nuclear Oversight Identified "B" Essential Service Water Pump Room Watertight Door Left Open; June 11, 2002

Regulatory Guide 1.102; Flood Protection for Nuclear Power Plants; Revision 1

BwAP 1110-3; Plant Barrier Impairment Program; Revision 11

BB PRA-012; Internal Flooding Analysis Notebook Byron and Braidwood Station; Revision 1

Byron/Braidwood Probabilsitic Risk Assessment Internal Flooding Analysis; Revision 0

Probabilistic Screening Study of Auxiliary Building Flooding at Byron/Braidwood Stations (Scientech); November 1999

BwMS 3350-007; Hydrolazing of Auxiliary Building Floor Drains; Revision 2

0Bw0A PRI-8; Auxiliary Building Flooding; Revision 2

1Bw0A PRI-8; Essential Service Water Malfunction; Revision 101

AIR 20-1-88-276; Investigate Incorporation of Periodic Checking of Manholes on Cable Duct Runs Into the Appropriate Surveillances; October 7, 2001

Memo: CHRON # 0114791; Water in Electrical Manholes; June 5, 1992

WO 99013972; Hydrolazing of Auxiliary Building Floor Drains 5 Year Requirement; October 9, 2000

WO 99148712; Hydrolazing of Auxiliary Building Leak Detection Sumps; September 14, 2002

WO 99148713; Hydrolazing of Auxiliary Building Leak Detection sumps; September 14, 2002

List of Open Plant Barrier Impairments >48 Hour

CR 117223; WE009 Pits Filling With Ground Water; July 23, 2002

CR 117813; Inaccuracies Exist For Flood Seal Reports Used in BwVS 220-1; July 31, 2002

CR 120717; Nuclear Oversight Identified Hourly Flood Seal Inspection Not Performed; August 27, 2002

CR 123233; Rags Left Around 2A Chemical and Volume Control Pump Room Floor Drain; September 17, 2002

CR 123749; Issues With Floor Drain Use/Awareness Warrant Reinforcement; September 19, 2002

CR 123878; Discrepancy Between Updated Final Safety Analysis Report and Auxiliary Building Flood Calculations; September 18, 2002

CR 128631; Potential For Floor Drain Clogs (rags collecting seepage); October 22, 2002

CR 129545; Unit 1 and Unit 2 Turbine Building Roof Drains All Blocked; October 30, 2002

CR 137374; Foreign Material Exclusion Discovered in 2LS-WE003 Sump; December 26, 2002

CR 138825; Gap Under Door Does Not Match Flood Calculation Assumption; December 06, 1991

CR 145436; Flood Barrier Blocked With Hoses Stacked On FS1-1; February 13, 2003

Diagram of Miscellaneous Drains Lake Screen House Units 1 & 2; M-67; Revision C

1R11 Licensed Operator Requalification Program

Scenario 0312; Design Basis Steam Generator Tube Rupture/Reactor Coolant Pump Seal malfunction and Updated Final Safety Analysis Report Timing Scenario; December 10, 2002

OP-AA-101-111; Rules and Responsibilities of On-Shift Personnel; Revision 0

OP-AA-103-102; Watchstanding Practices; Revision 0

OP-AA-103-103; Operation of Plant Equipment; Revision 0

OP-AA-103-104; Reactivity Management Controls; Revision 0

OP-AA-104-101; Communications; Revision 0

CR 139812; Simulator Response of 1PR11J As Compared to Plant Response; January 16, 2003 [NRC-Identified]

1R12 Maintenance Effectiveness

CR 098719; 2nd Deferral Generated for 0CC01A Heat Exchanger Inspection; March 11, 2002

CR 101575; Packing Gand Nuts May Have Insufficient Thread Engagement; March 29, 2002

CR 105327; Interior Diameter Tube Pitting Found in U2 Component Cooling Heat Exchanger (2CC01A) During A2R09; April 24, 2002

CR 113751; Momentary Reactor Coolant Pump 2B Bearing Component Cooling Water Flow Low Alarm 2-7-B5; June 28, 2002

CR 130291; Maintenance Rule Component Cooling1 Availability Criteria Exceeded; November 5, 2002

CR 130833; Repeat Maintenance - Oil Leak on 0CC01P; October 12, 2002

CR 134730; Repeat Maintenance - 1B Component Cooling Pump Excessive Oil Leakage/Consumption; December 9, 2002

CR 148516; Apparent Common Cause for Maintenance Rule (A)(1) Systems; March 10, 2003

CR (CAP001) List Report; February 21, 2003

EC 39346; Reroute Component Cooling Lines and Supports; February 2, 1993

EC 40170; Change Motor Output Shaft and Interfacing Gear Ration on Motor Operated Valves 1CC9473 A & B and 2CC9473 A & B; September 30, 1992

EC 440328; Reinstall Relief Valve 2CC9419 Vertically; November 15, 1994

ER-AA-2002; Exelon Nuclear System Health Indicator Program; Revision 2

Braidwood's Archival Operations Narrative Logs; February 24, 2002 to February 24, 2003

Braidwood's Archival Operations Narrative Logs Unit 1; February 1, 2002 to February 6, 2003

Braidwood's Archival Operations Narrative Logs Unit 2; February 1, 2002 to February 6, 2003

Electric Power Research Institute Example System Monitoring Plan System Monitoring Plan; Essential Service Water

Expert Panel Meeting; Essential Service Water; February 11, 2002

Expert Panel Meeting; Residual Heat Removal; July 29, 2002

Expert Panel Meeting; Essential Service Water; September 23, 2002

Expert Panel Meeting; Component Cooling; November 11, 2002

High Safety Significance Status of In-Scope Function (User Parameters); Essential Service Water

List of Work Orders

List of Essential Service Water Mods Installed Last Two Years

NRC Maintenance Rule Data Request; Essential Service Water System Unavailability and Reliability

Maintenance Rule Evaluation History (User Parameters; Essential Service Water System; February 24, 2002 through February 24, 2003

Maintenance Rule Expert Panel Scoping Determination; Essential Service Water

Maintenance Rule - Performance Criteria (User Parameters); Essential Service Water

Plant Health Committee System Presentation; Essential Service Water; January 2003

1R13 Maintenance Risk Assessments and Emergent Work Control

BwAP 335-1T1; Shift Manager Turnover Tuesday, January 7, 2003, Oncoming Shift 2; Revision 6E1

BwAP 335-1T1; Shift Manager Turnover Wednesday, January 8, 2003, Oncoming Shift 2; Revision 6E1

BwOP CV-E1; Electrical Lineup - Unit 1 Operating; Revision 6

BwOP CV-M1; Operating Mechanical Lineup Unit 1; Revision 16

BwOP SI-E1; Electrical Lineup - Unit 1 Operating; Revision 6

BwOP SI-M1; Operating Mechanical Lineup Unit 1; Revision 14

1BwOS XLE-R1; Unit 1 Locked Equipment 18 Month Surveillance; Revision 17

CR 138762; Unit 1 Refueling Water Storage Tank Heater Potentially Degraded; January 9, 2003 [NRC-Identified]

CR 139018; Equipment in Use Since April 11, 1997; January 10, 2003 [NRC-Identified]

CR 139440; Air Operated Valve 1CV110A American Society of Mechanical Engineers Class 3 Has Active Wet Borated Water Packing Leak; January 13, 2003 [NRC-Identified]

CR 141246; Unplanned Limiting Condition for Operations Action Requirement Entry - OVC16Y Slow Operation Due to Freezing; January 27, 2003

CR 141591; 1RH01PB Work Results in Higher than Expected Dose; January 28, 2003

CR 141786; Improper Thread Engagement on 1RH8708B Inlet Flange; January 28, 2003

CR 141866; NRC Plant Tour Concerns in Unit 2 Containment Spray and Residual Heat Removal Pump Rooms; January 29, 2003 [NRC-Identified]

CR 141953; Working Safely Under Suspended Loads (Containment Spray and Residual Heat Removal Pump Motors; January 30, 2003

CR 141962; Suspected Increased Dose Rate in 1RH01PB Room; January 30, 2003

CR 142397; The Identification of the 1B Residual Heat Removal Pump Casing was Found to be Out of Round; January 31, 2003

CR 142555; 1B Residual Heat Removal Pump Inoperable for Longer than 7 Day Limiting Condition for Operations Timeclock; February 2, 2003

CR 142851; Pump Assembly Difficulties with 1B Residual Heat Removal Pump Work; January 31 2003

CR 142839; 1RH01PB Work Window Exceeded its Planned 113 Hour Duration; January 31, 2003

CR 142894; Delay in 1A Safety Injection Pump Work Window: Essential Service Water Isolation; February 3, 2003

Archival Operations Narrative Logs; February 2, 2003 12:00:00 AM and Before February 2, 2003 11:59:59 PM

Braidwood Active Operations Narrative Logs; February 3 and February 4, 2003

Shift Manager Turnover Oncoming Shift 2; February 2, 2003

Shift Manager Turnover Oncoming Shift 2; February 4, 2003

Contingency Plan 1A Safety Injection Pump Cubicle Cooler; February 3, 2003

Project View; Fragnet Identification: 1SX01PB - Work Window 72 Hour Limiting Conditions for Operations Action Requirement; February 21, 2003

Safety Verification Check List 001 2SX147A; Containment Chiller 2A Bypass Isolation Valve Assembly

Shift Manager Turnover; Oncoming Shift 2; February 11, 2003

Unit 1 Nuclear Station Operator Turnover; Oncoming Shift 2; February 11, 2003

Unit 1 Standing Order 02-009; Limiting Condition for Operations 3.5.2 Notice of Enforcement Discretion Requirements; February 2, 2003

Letter from James D. von Suskil to U.S. Nuclear Regulatory Commission; Request for Notice of Enforcement Discretion for Technical Specification 3.5.2; "Emergency Core Cooling Systems - Operating"; February 4, 2003

Letter from Geoffery E. Grant to John L. Skolds; Notice of Enforcement Discretion for Exelon Generation Company, LLC Regarding Braidwood (NOED 03-3-002); February 6, 2003

WC-AA-101-1004; Project Summary 1B Essential Service Water Pump Oil Piping Modification and General Maintenance (SX10); Revision 0

WC-AA-101-1004; Project Summary 1A Containment Spray Work Window; Revision 0

WC-AA-104; Exelon Nuclear Review and Screening for Production Risk; Revision 4

1R14 Personnel Performance During Non-Routine Evolutions and Events

Braidwood's Archival Operations Narrative Logs; March 26-27, 2003

CR 150720; Unexplained Reactor Power Increase and 2B 1ST Stage Reheater Drain Tank Problem; March 26, 2003

CR 150883; Instrument Air Line Leaks and Their Repair; March 26, 2003

NRC Memorandum from E. L. Jordan; Discussion of "Licensed Power Level" (AITS F14580H2); August 22, 1980

1R15 Operability Evaluations

BwOP SI-5; Raising Safety Injection Accumulator Level With Safety Injection Pumps; Revision 20

1BwEP ES-0.2; Natural Circulation Cooldown Unit 1; Revision 1A WOG 1C

1Bw0SR 5.5.8.SX-1B; Essential Service Water Train B Valve Stroke Quarterly Surveillance; Revision 5

CN-FSE-00-2; Byron/Braidwood Unit 1 Auxiliary Feedwater Storage Volume for Uprating to 3600.6 MWt NSSS Power; Revision 0

CN-FSE-00-7; Byron/Braidwood Unit 2 Auxiliary Feedwater Storage Volume for Uprating to 3600.6 MWt NSSS Power; Revision 0

CR 96945; Rework - 2SX016B Molded Case Breaker Replacement; February 25, 2002

CR 140853; BwEPs Are Not Consistent With Condensate Storage Tank Technical Specification Bases 3.7.6; January 23, 2003

CR 140853; (OD #03-001); Current Emergency Procedures Are Not Consistent With Design Basis and Technical Specification Bases; Revision 0

CR 142899; Vtip Reviews Not Reflecting That Latest Information; January 31, 2003

CR 144947; Repeat Maintenance - 1SX016B Breaker Tripped on Open Signal; February 18, 2003

MA-AP-734-413; Residual Heat Removal Pump Disassembly and Assembly; Revision 1

MA-BR-724-436; Containment Spray and Residual Heat Removal Pump Motor Inspection and Maintenance; Revision 0

NRC Information Notice 2003-03; Part 21 - Inadequately Staked Capscrew Renders Residual Heat Removal Pump Inoperable; January 27, 2003

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1R19 Post Maintenance Testing

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1BwVSR 5.5.8.SI.1; ASME Surveillance Requirements for 1A Safety Injection Pump; Revision 4

1BwVSR 5.5.8.SX.2; ASME Surveillance Requirements for 1B Essential Service Water Pump; Revision 4

CR 143177; Typographical Error Discovered in 1A Safety Injection Pump ASME Surveillance; February 5, 2003

CR 143898; Maximum Pump Amps Discrepancy Between BwOP and ASME Procedure; February 5, 2003 [NRC-Identified]

CR 144099; Masonry Wall Gap in 1A Safety Injection Pump Room Not Properly Sealed; February 5, 2003 [NRC-Identified]

HU-AA-104-101; Procedure Use and Adherence; Revision 0

WO 99181654; 1B Essential Service Water Pump Replace Oil Piping With Flex Hoses per Design Change Procedure D20-1-00-353

WO 00506226 01;ASME Surveillance Requirements for Residual Heat Removal Pump RH01PB; February 3, 2003

WO 00509231 01;ASME Surveillance Requirements for Safety Injection Pump; February 6, 2003

WO 00520034 01;ASME Surveillance Requirements for 1B Essential Service Water Pump; February 25, 2003

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1R22 Surveillance Testing

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Regulatory Guide 1.163; Performance-Based Containment Leak-Test Program; September 1995

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WO 00080174; Attachment 1, Troubleshooting Log; February 13, 2003

WO 00444556 01; Unit 2 Local Leak Rate Test SA 032/033 P56 Containment Service Air System Support

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WO 99233296 26; Valve Disc Appears Separated From Stem - Repair Valve, Set-up Temporary Power Panels to Support Freeze Activities; January 13, 2002

WO 99233296 27; Valve Disc Appears Separated From Stem - Repair Valve, Remove Paint From Line for Freeze Seal; January 13, 2002

1EP6 Drill Evaluation

Scenario 0312; Design Basis Steam Generator Tube Rupture/Reactor Coolant Pump Seal malfunction and Updated Final Safety Analysis Report Timing Scenario; December 10, 2002

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

BW020031; 2001 Radioactive Release Report; April 26, 2002

BW020045; 2001 Annual Radiological Environmental Operating Report; May 14, 2002

BwIS RETS 2.2.B-201; Surveillance Calibration of GA Effluent Radiation Monitors; Revision 6

0PR01J; Calibration of Liquid Release Tank Radiation Monitor; October 25, 2001

2PR02J; Calibration of Liquid Effluent Radiation Monitor; December 18, 2002

1PR028J; Calibration of Vent Stack Radiation Monitor; August 1, 2001

1PR30J; Calibration of Wide Range Gas Radiation Monitor; September 1, 2001

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BwCP 210-14; High Purity Germanium Detection System Efficiencies Standardization; Revision 6

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35P1115; Germanium Detector Calibration Verification; September 29, 2000

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G-02-002; Gaseous Release Package; April 19, 2002

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CR114082; Liquid Release Spreadsheet Corrupted; July 2, 2002

CR116143; Additional Discrepancies Noted in Liquid Release Spreadsheet; July 18, 2002

CR136773; Deficiencies Identified During FASA for Offsite Dose Calculation Manual; December 19, 2002

CR137113; Inconsistencies in Entering Containment Release RETDAS Data; December 22, 2002

Offsite Dose Calculation Manual; Revision 3

Testing Frequencies for Ventilation Systems with Charcoal Beds; January 9, 2003

Analytics Radiochemistry Cross Check Program Results; Year 2002
Focus Area Self Assessment: Radiological Effluent Controls Program; November 15, 2002

Regulatory Assessment Performance Indicator: Radioactive Effluents Treatment System/Offsite Dose Calculation Manual Radiological Effluent Occurrences; October 2001 to September 2002

4OA1 Performance Indicator Verification

Archival Operations Narrative Logs; Search Criteria “3.5.2 and Residual Heat Removal;” January 1, 2002, through December 31, 2002

Archival Operations Narrative Logs; Unit 2; August 28 through August 30, 2002, and April 20 through May 12, 2002

4OA2 Identification and Resolution of Problems

Updated Final Safety Analysis Report; Section 6.2.1.1.2; Subsection Inadvertent Spray Actuation; Revision 7

Technical Specification Basis B 3.6.4; Containment Pressure; Revision 0

NUREG-0876; Safety Evaluation Report Related to the Operation of Byron Station Units 1 and 2; Section 6.2.1.1; Containment Structure; Protection Against Damage from External Pressure; Original

NUREG-0876; Safety Evaluation Report Related to the Operation of Byron Station Units 1 and 2; Section 6.2.1.1; Containment Structure; Protection Against Damage from External Pressure; Supplement 2

Technical Specification 3.6.4; Containment Pressure; Amendment 98

BwAR 0-33-D6; Containment Internal Press High Low; Revision 8

CR 90016; NRC Notice of Violation - Adequacy of Ultimate Heat Sink Technical Specification Temperature Surveillance with associated Action Tracking Items; December 12, 2002

NRC Inspection Manual Part 9900: Technical Guidance; Standard Technical Specifications Section 3.0 Acceptable Measurement Tolerances for Technical Specification Limits; October 1, 1978

CR 151545; Followup Action to Notice of Violation (Residual Heat Removal Flowrate); March 31, 2003

CR 151550; Followup Action to Notice of Violation (Main Steam Safety Valve Setpoints); March 31, 2003

CR 151553; Followup Action to Notice of Violation (Rod Drop Time); March 31, 2003

CR 151931; Missing Calculation; April 2, 2003 [NRC-Identified]

Technical Specification 3.1.4; Rod Group Alignment Limits; Amendment 98

Technical Specification 3.7.1; Main Steam Safety Valves; Amendment 98

Technical Specification 3.9.5; Residual Heat Removal and Coolant Circulation - High Water Level; Amendment 98

4OA5 Other

Letter from James D. von Suskil to U.S. Nuclear Regulatory Commission; Request for Notice of Enforcement Discretion for Technical Specification 3.5.2; “Emergency Core Cooling Systems - Operating”; February 4, 2003

Letter from Geoffery E. Grant to John L. Skolds; Notice of Enforcement Discretion for Exelon Generation Company, LLC Regarding Braidwood (NOED 03-3-002); February 6, 2003

Root Cause Investigation Report; Planning, Scheduling and Project Coordination Issues Contributing to the 1RH01PB Exceeding its Planned Work Window Which Resulted in Submitting a Request for Notice of Enforcement Discretion NOED; March 13, 2003

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
BwAP	Braidwood Administrative Procedure
BwAR	Braidwood Annunciator Response Procedure
BwEP	Braidwood Emergency Operating Procedure
BwIS	Braidwood Instrument Surveillance
BwMS	Braidwood Maintenance Surveillance
BwOA	Braidwood Abnormal Operating Procedure
BwOP	Braidwood Operating Procedure
BwOS	Braidwood Operating Surveillance
BwOSR	Braidwood Operating Surveillance Requirement
BwVP	Braidwood Engineering Procedure
BwVS	Braidwood Engineering Surveillance
BwVSR	Braidwood Engineering Surveillance Requirement
CFR	Code of Federal Regulations
CR	Condition Report
CV	Chemical and Volume Control
EC	Engineering Change
ICM	Interim Compensatory Measures
NCV	Non-Cited Violation
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
RCFC	Reactor Containment Fan Coolers
RH	Residual Heat Removal
SI	Safety Injection
SX	Essential Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order