October 29, 2004

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000456/2004007;
05000457/2004007

Dear Mr. Crane:

On September 30, 2004, 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 September 30, 2004, with Mr. T. Joyce 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 NRC-identified finding of very low safety significance, which involved a violation of NRC requirements, was identified. However, because the violation was of very low safety significance and because the issue was entered into the licensee's corrective action program, the NRC is treating the finding as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

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 facility.

In accordance with 10 CFR 2.390 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 05000456/2004007; 05000457/2004007
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Braidwood Station
Plant Manager - Braidwood Station
Regulatory Assurance Manager - Braidwood Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing
Manager Licensing - Braidwood and Byron
Senior Counsel, Nuclear, Mid-West Regional Operating Group
Document Control Desk - Licensing
Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer
Chairman, Illinois Commerce Commission

DOCUMENT NAME: E:\Filenet\ML043060332.wpd
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII			
NAME	AMStone:dtp			
DATE	10/29/04			

OFFICIAL RECORD COPY

ADAMS Distribution:
AJM
DFT
GFD
RidsNrrDipmIipb
GEG
HBC
SPR
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov (inspection reports, final SDP letters, any letter with an IR number)

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-456; 50-457
License Nos:	NPF-72; NPF-77
Report No:	05000456/2004007; 05000457/2004007
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Station, Units 1 and 2
Location:	35100 S. Route 53 Suite 79 Braceville, IL 60407-9617
Dates:	July 1 through September 30, 2004
Inspectors:	S. Ray, Senior Resident Inspector N. Shah, Resident Inspector L. Haeg, Reactor Engineer J. House, Senior Radiation Specialist H. Peterson, Senior Operations Engineer R. Skokowski, Senior Resident Inspector, Byron Station P. Snyder, Resident Inspector, Byron Station T. Tongue, Project Engineer P. Smith, Illinois Emergency Management Agency
Observers:	S. Cameron, Student Engineer J. Robbins, Reactor Engineer A. Wichman, Student Engineer M. Wilke, Reactor Engineer
Approved by:	Ann Marie Stone, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000456/2004007, 05000457/2004007; 07/01/04 - 09/30/04; Braidwood Station, Units 1 & 2; Post-Maintenance and Surveillance Testing.

This report covers a 3-month period of baseline resident inspection and an announced baseline inspection on radiation protection. The inspection was conducted by Region III inspectors and the resident inspectors. One Green finding associated with a Non-Cited Violation was identified. 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 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. The inspectors identified a finding of very low safety significance when they noted that the procedures for operating the hydrogen recombiners, if followed as written, would have resulted in the recombiners operating at too low of a temperature to be effective. This was due to a revision that changed the startup procedure, but not the panel lineup and shutdown procedures. The causes of this violation were related to the cross-cutting areas of Human Performance, because a system engineer failed to properly revise the procedures, and Problem Identification and Resolution, because the purpose of the revision was as a corrective action for a previously identified violation and was not effective. The condition existed for a period of 2 weeks before being identified and corrected through another procedure revision.

  The finding was more than minor because it affected the Barrier Integrity cornerstone objective of providing reasonable assurance that the physical containment barrier would protect the public from radio nuclide releases caused by accidents or events. The finding was of very low safety significance because the hydrogen recombiner system is not a significant contributor to the large early release frequency for pressurized water reactors with large dry containments. This issue was determined to be a non-cited violation of 10 CFR 50, Appendix B, Criteria V, for procedures that were not appropriate to the circumstances. (Section 1RST)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power for the entire inspection period except that power was reduced to about 88 percent from July 4 through July 6, 2004, for turbine and governor valve testing. On about September 27 the licensee began a gradual coastdown of power in preparation for a refueling outage. Power had been reduced to about 95 percent at the end of the inspection period.

Unit 2 operated at or near full power for the entire inspection period except that power was reduced to 86 percent on September 27 for turbine and governor valve testing.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Complete Walkdowns

a. Inspection Scope

The inspectors performed a complete system walkdown of the Unit 2 safety injection system. This walkdown represented one inspection sample. This system was selected because it emergency core cooling system (ECCS) valves were a moderately high contributor to the overall core damage frequency in the licensee's probabilistic risk analysis.

In addition to the walkdown, the inspectors reviewed the following:

- selected operating, emergency, and surveillance procedures which involved manipulations of safety injection valves;
- the Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS), and other selected design bases documentation regarding the safety injection system;
- condition reports (CRs) for the system initiated within the last year; and
- outstanding system work orders (WOs).

The inspectors also reviewed the CRs to determine whether issues were being properly addressed in the licensee's corrective actions program. Documents reviewed as part of this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Partial Walkdowns

a. Inspection Scope

The inspectors performed partial walkdowns of the accessible portions of risk-significant system trains during periods when the train was of increased importance due to redundant trains or other equipment being unavailable. The inspectors utilized the valve and electric breaker checklists, as well as other documents listed in the Attachment, to determine 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 confirm there were no obvious deficiencies. The inspectors reviewed outstanding WOs and CRs associated with the train to determine whether those documents revealed issues that could affect train function. The inspectors used the information in the appropriate sections of the TS and the UFSAR to determine the functional requirements of the system. The inspectors also reviewed the licensee's identification of and the controls over the redundant risk-related equipment required to remain in service. The inspectors completed four samples of this requirement by walkdowns of the following trains:

- the 1B centrifugal charging system prior to planned maintenance on the 1A chemical and volume control train;
- the 1A residual heat removal (RH) train prior to a planned work window on the 1B RH train;
- the 2B emergency diesel generator (DG) prior to a planned work window on the 2A DG; and
- the 1B essential service water pump during a planned work window on the 1A pump.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Area 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 or their potential to impact equipment which could initiate a plant transient. The inspectors used the documents listed in the Attachment to determine whether 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 confirmed that minor issues identified during the inspection were entered into the licensee's corrective action program.

The inspectors completed ten samples of this inspection requirements during the following walkdowns:

- main control room (Fire Zone 2.1-0);
- division 12 engineered safety feature (ESF) switchgear room (Fire Zone 5.1-1);
- division 11 ESF switchgear room (Fire Zone 5.2-1);
- division 22 ESF switchgear room (Fire Zone 5.1-2);
- division 21 ESF switchgear room (Fire Zone 5.2-2);
- turbine building 451 foot elevation (Fire Zone 8.6-0);
- turbine building 369 foot elevation Unit 1 (Fire Zones 8.1-0 and 8.2-1);
- technical support center (Fire Zone 18.26-1);
- 1B DG room (Fire Zone 9.1-1); and
- turbine building 369 foot elevation Unit 2 (Fire Zone 8.2-2).

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Review of Testing/Training Activity

a. Inspection Scope

The inspectors observed an operating crew performance during an evaluated simulator out-of-the-box scenario. The inspectors evaluated crew performance in the following areas:

- 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 confirmed 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 determine whether they also noted the issues and discussed them in the critique at the end of the session. This inspection constituted one sample.

b. Findings

No findings of significance were identified.

.2 Biennial Written Examination and Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of individual Job Performance Measure (JPM) operating tests, and simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee during calender year 2004. A written examination was conducted; however, it was not considered or taken credit for as the NRC comprehensive biennial examination. The overall results were compared with the significance determination process in accordance with NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)."

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

Routine Inspection

a. Inspection Scope

The inspectors reviewed the licensee's overall maintenance effectiveness for risk-significant event initiating, mitigating, and barrier integrity 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;
- attending various meetings throughout the inspection period where the status of maintenance rule activities was discussed;
- a partial walkdown of the selected system; and
- interviews with the appropriate system engineer.

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 confirmed that the licensee was appropriately tracking reliability and/or unavailability for the systems.

The inspectors completed three samples in this inspection requirement by reviewing the following systems:

- instrument power;
- ground detection and cathodic protection system, and
- emergency DGs.

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 determine whether 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, observations of work in progress, and the documents listed in the Attachment were used by the inspectors to determine whether the equipment configurations were properly listed, that protected equipment were identified and were being controlled where appropriate, that work was being conducted properly, and that significant aspects of plant risk were being communicated to the necessary personnel. The inspectors confirmed 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 to determine whether identified problems were being entered into the program with the appropriate characterization and significance. The inspectors confirmed that minor issues identified during these inspections were entered into the licensee corrective action program.

The inspectors completed six samples by reviewing the following activities:

- cleaning and testing of both trains of Unit 1 reactor containment fan coolers (RCFCs) following identification of low service water flow from fouling followed by thermal performance testing of the Unit 2 RCFCs;
- operator response following an unplanned urgent failure of the Unit 1 rod control system;
- operator response following an unplanned loss of the Unit 1 containment high-3 pressure sensing relay;
- identification of low service water flow on the 2B RCFC during planned maintenance on the 2A DG and 2B component cooling (CC) pump;
- an emergent issue with switchyard breaker 1-8 during planned maintenance on the 2B CC pump; and
- planned maintenance on battery charger 211 requiring direct current (DC) cross-tie from Unit 2 DC bus 211 to Unit 1 DC bus 111.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events (71111.14)

a. Inspection Scope

The inspectors completed one sample by observing the following event:

- an unplanned entry into 0BwOA Elec-1, “Abnormal Grid Conditions–Unit 0,” after the licensee was notified by the Transmissions Group of potential, degraded voltage conditions in the Units 1 and 2 switchyard.

For this event, the inspectors interviewed plant operators and reviewed plant records including control room logs, operator turnovers, and CRs. The inspectors confirmed that the control room response was consistent with 0BwOA Elec-1 and determined whether identified discrepancies were captured in the corrective action program. 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 UFSAR to the licensee’s evaluations presented in the CRs and

documents listed in the Attachment to determine whether the components or systems were operable. The inspectors also conducted interviews with the appropriate licensee system engineers and conducted plant walkdowns, as necessary, to obtain further information regarding operability questions. The inspectors confirmed that minor issues identified during the inspection were entered into the licensee's corrective action program.

The inspectors completed eight samples by reviewing the following operability evaluations and conditions:

- Unit 1 rod control system following an unplanned rod control urgent failure alarm;
- S hooks on electro-thermal links for fire dampers installed incorrectly;
- Unit 1 and 2 lightning arrester system following several Unit 1 rod urgent failure alarms due to lightning strikes;
- 2D RCFC flow instrument not responding;
- low service water flow to the 2B RCFC;
- adequacy of TS 3.6.6 for containment spray and cooling systems;
- failure of Instrument Inverter 114; and
- discolored oil on the 2B CC pump outer bearing.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

Annual Review

a. Inspection Scope

The inspectors evaluated the permanent plant modification installed under Engineering Change Request 348152 to relocate the sample lines for control room radiation monitors 0PR31J, 0PR32J and 0PR33J. This modification affected a safety-significant barrier integrity system and was one of the corrective actions in response to Licensee Event Report (LER) 2003-001-00, "Control Room Ventilation System Alignment Results in Inoperable Radiation Monitors."

The inspectors reviewed the design change package and associated work orders for installation and observed the pre-job brief and actual installation of the modification. After the modification was installed, the inspectors performed a walkdown of the radiation monitors to determine whether operation was proper. The inspectors confirmed that the modification did not introduce any new system vulnerabilities and did not create any new system interface problems. Documents reviewed as part of this inspection are listed in the Attachment. The inspectors confirmed that minor issues identified during the inspection were entered into the licensee's corrective action system. This activity constituted one inspection sample of the annual requirement.

b. Findings

No findings of significance were identified.

1RST Post-Maintenance and Surveillance Testing - Pilot (71111.ST)

a. Inspection Scope

The inspectors reviewed post-maintenance and surveillance testing activities associated with important mitigating, barrier integrity, and support systems to ensure that the testing adequately demonstrated system operability and functional capability. For post-maintenance testing, the inspectors used the appropriate sections of the TS and UFSAR, as well as the WOs for the work performed, to evaluate the scope of the maintenance and to determine whether the post-maintenance testing was performed adequately, demonstrated that the maintenance was successful, and that operability was restored. For surveillance testing, the inspectors determined whether the testing met the TS, the UFSAR, and licensee procedural requirements, and demonstrated that the equipment was capable of performing its intended safety functions. The inspectors determined whether 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 was met; and that the results of the tests were properly reviewed and recorded. The activities were selected based on their importance in demonstrating mitigating systems capability and barrier integrity. The inspectors confirmed that minor issues identified during the inspection were entered into the licensee's corrective action program. Documents reviewed as part of this inspection are listed in the Attachment.

Note that this inspection is a pilot for a proposed consolidated procedure combining the previous Post-Maintenance Testing (71111.19) and Surveillance Testing (71111.22) procedures.

Five samples were completed by observing post-maintenance testing after the following activities:

- procedure revisions and annunciator repair on the 0A hydrogen recombiner;
- planned maintenance of the 1A centrifugal charging pump;
- planned maintenance on the 1B RH train;
- planned maintenance on the 2A DG; and
- emergent bearing change on the 2B CC pump.

Four samples were completed by observing and evaluating the following surveillance tests:

- Unit 1 motor-driven auxiliary feedwater pump quarterly;
- local leak rate testing of the of the Unit 1 containment miniflow purge isolation valves;
- new fuel receipt and inspections; and
- Unit 2 reactor containment fan coolers monthly surveillance testing.

b. Findings

Introduction: The inspectors identified a Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criteria V, having a very low safety significance (Green) for an inadequate procedure for startup of the hydrogen recombiners. The procedure, if followed as written, would have resulted in the recombiners operating at too low of a temperature to be effective.

Description: As a result of one of the issues associated with a finding discussed in Inspection Report 05000456/2004004; 05000457/2004004, Section 1R15.1, the licensee revised the procedure for startup of the hydrogen recombiners (BwOP OG-10) on July 9, 2004. The revision removed the steps calling for manual adjustment of the reaction chamber gas temperature controller during startup to let the recombiner come up to the normal operating temperature of 1325 degrees Fahrenheit automatically as described in the UFSAR.

On July 23, 2004, the inspectors attended a pre-job briefing for a planned startup of the 0A hydrogen recombiner. The system engineer had proposed to demonstrate that the recombiner would operate properly with the revised procedure. During the briefing, an operator noted that the first step of the startup procedure required completion of the recombiner panel lineup sheet (BwOP OG-10T1). The panel lineup sheet called for the reaction chamber gas temperature controller to be set at 1100 degrees Fahrenheit and the operator questioned whether that was the correct value. The inspectors informed the operators that it appeared that the panel lineup sheet had not been revised when the startup procedure was revised. The inspectors also noted that the recombiner shutdown procedure (BwOP OG-9) also called for leaving the temperature controller set to 1100 degrees when the system was shutdown.

The work execution center supervisor called the system engineer who confirmed that both procedures should have been revised to list 1325 degrees, the normal recombiner operating temperature, instead of 1100 degrees. The system engineer stated that he had not realized that the panel lineup and shutdown procedures needed to be changed at the same time that the startup procedure was revised. The licensee revised both procedures to include the correct 1325 degree setpoint later on July 23, 2004, and the 0A recombiner was started up and operated.

Analysis: The inspectors determined that failure to revise the panel lineup and shutdown procedures was a performance deficiency warranting a significance evaluation. Had a hydrogen recombiner been needed for an event between July 9 and July 23, 2004, and operators had followed the procedures as written, the recombiner reaction chamber gas temperature would have controlled at 1100 degrees rather than the 1325 degrees necessary for a proper oxygen/hydrogen recombination reaction. The same common procedure was used for both trains of recombiners so neither would have functioned properly in an event. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, “Power Reactor Inspection Reports,” Appendix B, “Issue Disposition Screening,” issued on June 20, 2003. The inspectors answered “yes” to minor Question Number 4 because the finding was associated with the containment Barrier Integrity cornerstone attribute of risk important systems function and affected the cornerstone objective of providing reasonable assurance that the

physical containment barrier would protect the public from radio nuclide releases caused by accidents or events. The function of the recombiners was to remove hydrogen from the containment, post accident, before it threatened containment integrity by reaching highly flammable concentrations. The finding also affected the cross-cutting areas of Human Performance, because the system engineer failed to revise two necessary procedures, and Problem Identification and Resolution, because the corrective action for the violation discussed in the previously mentioned inspection report was not adequately implemented.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process," dated March 21, 2003. Using the Phase 1 screening worksheet in Appendix A, Attachment 1, dated September 10, 2004, the inspectors answered "yes" to Question 3 in the Containment Barriers column because the finding caused an actual reduction in defense-in-depth for the hydrogen control function of the reactor containment. The inspectors conducted a Phase 2 analysis using IMC 0609 Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004. The finding was screened as Green because it did not affect the core damage frequency and inoperability of the hydrogen recombiner did not have a significant effect on the large early release frequency for a pressurized water reactor with a large dry containment. In addition, the inspectors determined through discussions with operators and engineers, as well as observations of the emergency response organization, that the procedure discrepancies would probably have been identified and corrected in an actual event. Therefore, this finding was considered to be of very low safety significance (Green) and was assigned to the Barrier Integrity cornerstone of both units.

Enforcement: Criterion V, "Instructions, Procedures, and Drawings," of 10 CFR 50, Appendix B required, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, between July 9 and July 23, 2004, the procedures for operating the hydrogen recombiners were not appropriate because they would have resulted in the recombiners operating at too low a temperature to be effective. The procedures were revised on July 23, 2004, and demonstrated to be appropriate. The licensee entered the issue into its corrective action program as CR 238380. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy.
(NCV 05000456/2004007-01; 05000457/2004007-01)

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the current status of the Units 1 and 2 positive displacement pumps. These pumps were originally installed equipment that were not being used or maintained by the licensee, but which had not been officially classified as abandoned. The positive displacement pumps were not considered safety-related, but did interface with the refueling water storage tank, a safety-related component, and were considered

a backup pump to the safety-related centrifugal charging pumps. The inspectors determined that the change did not have an unanalyzed affect on the safety functions of important safety systems. As part of this inspection, the inspectors reviewed the 10 CFR 50.59 screening, appropriate UFSAR sections, and the TS, to determine whether system operability/availability was affected. The inspectors confirmed that minor issues identified during the inspection were entered into the licensee's corrective action program. Documents reviewed as part of this inspection are listed in the Attachment. This review constituted one sample of this inspection requirement.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed licensee performance during an evaluated emergency response drill. Observations included manning of the Technical Support Center (TSC), turnover of command and control to and from the TSC, event classification and notification, and development of protective action recommendations. The inspectors also observed Operations Support Center (OSC) activities and accompanied one in-plant team. The inspectors confirmed that deficiencies noted during the drill, by either the inspectors or licensee evaluators, were entered into the licensee's corrective action program. The inspectors also attended portions of the post drill critique for the TSC and OSC crews. Documents reviewed as part of this inspection are listed in the Attachment. This activity constituted one inspection sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2PS2 Radioactive Material Processing and Transportation (71122.02)

Shipment Preparation

a. Inspection Scope

The inspectors reviewed shipment packaging and surveying, emergency instructions, disposal manifest, and shipping papers provided to the driver. The receiving licensee's authorization to receive the shipment package was verified. Radiation worker practices were observed in order to verify that the workers had adequate skills to accomplish

each task and to determine if the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H. The review was conducted to verify that the licensee's training program provided training consistent with NRC and Department of Transportation requirements. These reviews represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

Cornerstones: Mitigating Systems and Barrier Integrity

4OA1 Performance Indicator Verification (71151)

Reactor Safety Strategic Area

a. Inspection Scope

The inspectors reviewed the documents listed in the Attachment to determine whether the licensee had corrected reported performance indicator data, in accordance with the criteria in NEI [Nuclear Energy Institute] 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2. The data reported by the licensee was compared to a sampling of control room logs, CRs, and other sources of data generated since the last verification. The inspectors determined that minor issues identified during the inspection were entered into the licensee's corrective action program. The inspectors completed six samples by examining the following performance indicators:

Unit 1

- safety system unavailability - auxiliary feedwater system for the period of July 1, 2003 through June 30, 2004;
- safety system functional failures for the period of July 1, 2003 through June 30, 2004; and
- reactor coolant system activity for the period of May 1, 2003 through June 30, 2004.

Unit 2

- safety system unavailability - auxiliary feedwater system for the period of July 1, 2003 through June 30, 2004;
- safety system functional failures for the period of July 1, 2003 through June 30, 2004; and
- reactor coolant system activity for the period of May 1, 2003 through June 30, 2004.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 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 determine whether they were being entered into the licensee's corrective action program 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 program as a result of the inspectors' observations are generally denoted in the Attachment. These activities were part of normal inspection activities and were not considered separate samples.

b. Findings

No finding of significance were identified.

.2 Boric Acid Leakage Identification and Resolution (Annual Sample)

Introduction

The inspectors reviewed the licensee's process for identifying and resolving borated water leaks. The inspection focused on how identified leakage was being identified, how it was documented and tracked, and what corrective actions were taken. The inspectors were particularly concerned with how the licensee addressed those components particularly susceptible to boric acid corrosion. This inspection was prompted by an apparent increasing trend in the number of borated water leaks the licensee had identified over the past year. Additionally, this inspection was also planned to review the effectiveness of the licensee's new boric acid control program, which was implemented in August 2003. As a guide in this program, the inspectors referred to the Electric Power and Research Institute document No. 1000975, "Boric Acid Corrosion Guidebook," Revision 1.

a. Effectiveness of Problem Identification

(1) Inspection Scope

The inspectors reviewed those station procedures implementing the licensee's boric acid control program. The inspectors also reviewed the CRs listed in the Attachment to determine whether borated water leaks were being properly identified and evaluated. The inspectors performed walkdowns of selected areas of the auxiliary building to observe boric acid leakage and conducted interviews with selected licensee staff to determine whether the boric acid program requirements were understood.

(2) Issues

The licensee's procedures required that boric acid leakage be documented in CRs and routed to the station Boric Acid Control Coordinator (BACC) for review. The BACC was responsible for tracking, evaluating and resolving boric acid leaks. The inspectors noted that the procedures were consistent with the aforementioned industry document including identifying specific components and systems susceptible to boric acid corrosion.

During interviews, the BACC stated that the increase in CRs resulted from a renewed emphasis on identifying and resolving boric acid leakage following the implementation of the new program and in light of recent industry lessons learned. This resulted in more frequent plant walkdowns by the BACC and an increased awareness among plant staff following supplemental training on the new program requirements.

The inspectors observed that the majority of the boric acid CRs generated over the past year were written by the BACC. There were some CRs generated by the other work groups, primarily radiation protection and operations staff, however, the BACC stated that most boric acid issues were verbally communicated to him. The BACC maintained a database of all identified leaks tracking, in part, the date of identification, current status and planned corrective actions.

During plant walkdowns, the inspectors noted that most observed leaks were recorded in the BACC database. Those leaks identified by the inspectors, but not in the database, were documented in CRs by the BACC. The inspectors also noted that, when interviewed, licensee staff generally understood the boric acid program requirements. However, the inspectors identified some instances where leaks from borated water systems were documented in CRs, but were not sent to the BACC for review. The specific examples did not affect the operability of safety-significant systems, but did indicate a possible lack of sensitivity to boric acid leakage during the licensee's CR review process. The BACC documented this issue in a CR for followup.

b. Effectiveness of Corrective Actions

(1) Inspection Scope

The inspectors reviewed CRs documenting boric acid leakage and the BACC database to determine whether the licensee was effectively addressing boric acid leakage concerns. Specifically, for selected issues, the inspectors reviewed the "as found" reports, the associated engineering evaluation, the proposed corrective actions and interviewed licensee personnel. As part of this review, the inspectors performed plant walkdowns to observe the condition of the repaired components.

(2) Issues

The licensee appeared to be properly evaluating and correcting boric acid leaks. Specifically, the inspectors noted that the evaluations identified the source and nature of the deposits, the operability of the affected components, whether the leakage was recurring, the planned corrective actions and, if the issue had been resolved, whether

the corrective actions were effective. There was also reasonable and sufficient documentation for each issue.

The corrective actions for the reviewed items appeared adequate, were focused on the apparent cause for each condition and were appropriately scheduled for timeliness. The inspectors observed that active leaks having interim corrective actions, but not yet repaired, were contained and that there was no apparent further component degradation. For those leaks considered permanently repaired, the inspectors observed no recurrence of leakage.

4OA3 Event Followup (71153)

The inspectors completed four inspection samples in this area.

.1 Licensee Event Report Review

a. (Closed) LER 05000456/2004-002-00: 1C Reactor Containment Fan Cooler Discovered to be Inoperable Greater Than Required TS Allowed Outage Time

On June 1, 2004, during a monthly surveillance test, the licensee discovered that the essential service water flow rate through the 1C RCFC was below the limit of 2660 gallons per minute (gpm) of TS 3.6.6. The licensee's investigation determined that the flow had been below the TS limit since May 6, 2004, a period longer than the 7-day allowed outage time of the TS. The flow had been set too low in May due to the fact that the flow indication was inaccurate due to partial blocking from calcium carbonate deposits. Corrective actions, as discussed in the LER and in CR 224989, included cleaning and calibrating the flow detectors of all the RCFCs, resetting the flow control throttling valve for the 1C RCFC, and strengthening the program for creating and implementing adverse condition monitoring plans.

The inspectors concluded that the issue was greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued on June 20, 2003. The inspectors answered "yes" to minor Question Number 4 because the finding was associated with the containment Barrier Integrity cornerstone attribute of risk important systems function and affected the cornerstone objective of providing reasonable assurance that the physical containment barrier would protect the public from radio nuclide releases caused by accidents or events. The function of the RCFCs was to remove heat to limit the post-accident pressure in the containment.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process," dated March 21, 2003. Using the Phase 1 screening worksheet in Appendix A, Attachment A, dated September 10, 2004, the inspectors answered "yes" to Question 3 in the Containment Barriers column because the finding caused an actual reduction in defense-in-depth for the atmospheric pressure control function of the reactor containment. The inspectors conducted a Phase 2 analysis using IMC 0609 Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004. The finding was screened as Green because it did not affect the core damage frequency and inoperability of an RCFC did not have a

significant effect on the large early release frequency for a pressurized water reactor with a large dry containment. In addition, as discussed in the LER, based on the actual essential service water temperature during the period of inoperability, there was only a short period of time where even the degraded train of RCFCs alone would not have been able to perform its safety function. Therefore, this finding was considered to be of very low safety significance (Green) and was assigned to the Barrier Integrity cornerstone of Unit 1.

This licensee-identified finding involved a violation of TS 3.6.6, "Containment Spray and Cooling Systems." The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

b. (Closed) LER 05000456/2004-003-00: 0A Hydrogen Recombiner Identified to be Inoperable Greater Than the Required TS Allowed Outage Time

On June 16, 2004, the licensee identified that the 0A hydrogen recombiner had been inoperable in excess of the 30 day Allowed Outage Time permitted by TS 3.6.8. Specifically, the recombiner had been inoperable since March 3, 2004, when the heater breaker tripped during post-maintenance testing. This issue was previously considered a Non-Cited Violation and a finding of very low safety significance (Green). This issue was assigned to the Barrier Integrity cornerstone of both units since the 0A recombiner could serve either unit. The specifics of the issue including the inspectors' review and significance determination were discussed in NRC Inspection Report 05000456/2004004; 05000457/2004004. This LER is closed.

.2 Notification of Loss of Emergency Preparedness Capabilities

On August 4, 2004, the licensee notified the NRC via the Emergency Notification System, that it had experienced a major loss of emergency preparedness capabilities. Due to lightening and severe weather the night of August 3-4, 2004, the licensee experienced short periods where more than 25 percent of their offsite notification sirens were inoperable. The longest period was for about 42 minutes. The inspectors reviewed the records and determined that the public notification capabilities were restored in a timely manner and that the problem had been entered into the licensee's corrective action program. This issue was not a violation of NRC requirements.

.3 Increase in Unit 1 Containment Noble Gas Levels

a. Inspection Scope

On August 5, 2004, the licensee recognized an increase in Unit 1 containment noble gas levels, which indicated a small reactor coolant system leak. The leak was so small that there was no discernable increase in the leak rate calculation performed. On August 9, 2004, licensee personnel completed a containment tour and identified a small steam leak at a fitting on the pressurizer steam space sample line. Although the sample line was isolated, it appeared that the isolation valve (1PS9350A) was leaking by. The licensee evaluated the leak rate and the impact of the leak with no significant concerns identified. On August 12, 2004, the licensee performed another containment entry and closed a manual isolation upstream of the leak and effectively stopped the leak.

From the time the licensee identified the increase in noble gases, until the licensee stopped the leak on August 12, 2004, the inspectors monitored the leak rate, and the licensee's performance to address the concern. This included accompanying licensee personnel during the containment entry on August 12, 2004. The inspectors confirmed that the leak rate levels never approached the TS limits. Also, the inspectors assess the leak-by associated with the isolation valve 1PS9350A and confirmed that the condition was not prohibited by TS. Documents reviewed as part of this inspection were listed in the Attachment.

b. Findings

No findings of significance were identified.

.4 Notification of a Minor Oil Spill

On September 13, 2004, the licensee notified the NRC via the Emergency Notification System that it had notified the appropriate agencies of a small hydraulic oil spill on the property adjacent to the station. The inspectors determined that the event was not a significant NRC regulatory concern and did no followup. This activity was not considered an inspection sample but was included in the report to complete the public record.

4OA4 Cross-Cutting Aspects of Findings

.1 The finding described in Section 1RST of this report had, as one of its causes, a human performance deficiency, in that, the system engineer failed to revise two other applicable procedures when revising the startup procedure for the hydrogen recombiners, resulting in procedures that would not have worked if called upon.

.2 The finding described in Section 1RST of this report also had, as another one of its causes, a problem identification and resolution deficiency, in that, the licensee corrective actions following a previously identified violation for the hydrogen recombiners were not effective.

4OA5 Other Activities

Review of Institute of Nuclear Power Operations Report

The inspectors completed a review of the final report for the Institute of Nuclear Power Operations, January 2004 Evaluation, dated July 23, 2004.

4OA6 Meetings

Exit Meeting

The inspectors presented the inspection results to Mr. T. Joyce and other members of licensee management at the conclusion of the inspection on September 30, 2004. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Barrier Integrity

Technical Specification 3.6.6 required that two containment spray trains and two containment cooling trains shall be operable in Modes 1, 2, 3, and 4. With one or more containment cooling trains inoperable the trains must be restored to operable within 7 days or the unit be placed in Mode 3 within 6 hours. Surveillance Requirement 3.6.6.3 for demonstrating operability of the containment cooling train required that cooling water flow rate be greater than or equal to 2660 gpm. As described in LER 05000456/2004-002-00 and Section 4OA3.1a of this report, between May 6, 2004, and June 1, 2004, the cooling water flow to the 1C RCFC was less than 2660 gpm. The licensee entered this issue into its corrective action program as CR 224989.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
T. Joyce, Site Vice President
K. Polson, Plant Manager
D. Ambler, Regulatory Assurance Manager
D. Burton, Licensed Operator Requalification Training Group Lead
S. Butler, Regulatory Assurance - NRC Coordinator
G. Dudek, Operations Director
R. Gilbert, Nuclear Oversight Manager
J. Kuczynski, Chemistry Manager
D. Morse, Radioactive Materials Shipper
J. Moser, Radiation Protection Manager
M. Smith, Engineering Director
E. Wrigley, Maintenance Director

Nuclear Regulatory Commission
A. Stone, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000456/2004007-01; 05000457/2004007-01	NCV	Failure to Have Appropriate Procedures for Operation of the Hydrogen Recombiners (Section 1RST)

Closed

05000456/2004007-01; 05000457/2004007-01	NCV	Failure to Have Appropriate Procedures for Operation of the Hydrogen Recombiners (Section 1RST)
05000456/2004-002-00	LER	1C Reactor Containment Fan Cooler Discovered to be Inoperable Greater Than Required TS Allowed Outage Time (Section 4OA3.1a)
05000456/2004-003-00	LER	0A Hydrogen Recombiner Identified to be Inoperable Greater Than the Required TS Allowed Outage Time (Section 4OA3.1b)

Discussed

None.

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of 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.

1R04 Equipment Alignment

BwOA PRI-2; Emergency Boration Unit 1; Revision 100
BwOP CV-E1; Electrical Lineup - Unit 1 Operating; Revision 7
BwOP CV-M1; Operating Mechanical Lineup Unit 1; Revision 17
BwOP DG-1; Diesel Generator [DG] Alignment to Standby condition; Revision 19
BwOP DG-E4; Electrical Lineup - Unit 2 2B DG; Revision 4
BwOP SX-E1; Electrical Lineup - Unit 1; Revision 6
BwOP SX-M1; Operating Mechanical Lineup - Unit 1; Revision 23
BwOP RH-E1; Electrical Lineup - Unit 1 Operating; Revision 6
BwOP RH-M1; Operating Mechanical Lineup Unit 1 1A RH [Residual Heat Removal] Train; Revision 11
BwOP SI-1; Safety Injection System Startup; Revision 15
BwOP SI-2; Safety Injection System Shutdown; Revision 9
BwOP SI-3; Fill and Vent of the Safety Injection System; Revision 18
BwOP SI-E2; Electrical Lineup - Unit 2 Operating; Revision 6
BwOP SI-M2; Operating Mechanical Lineup Unit 2; Revision 13
2BwOSR 3.5.2.2-2; Unit 2 ECCS Venting and Valve Alignment Surveillance; Revision 8
2BwOSR 3.5.2.7; ECCS Mechanical Position Stop 18 Month Surveillance; Revision 1
Results of Braidwood Maintenance Database Search; Safety Injection System Work Order Backlog; July 1, 2004
CR 188015; Engineering Not Notified 2SI8801A Exceeded High Alert Limit; November 24, 2003
CR 188029; Valve 2SI8801A Exceeded High Alert Limit During Surveillance; November 24, 2003
CR 188531; Relief Valve From 2SI8842 During A2R10 Failed Testing; December 1, 2003
CR 194340; Discrepancy With Valve Position Listed in the UFSAR; January 9, 2004
CR 217704; Boric Acid Leakage Repair Deferred to A1R12 (1RH8724A); April 29, 2004
CR 218911; Unit 1 RH System Nuclear Energy Institute Unavailability Indicator in "Action" Region; May 5, 2004
CR 221159; Design Configuration Control Issues - Valve Models; May 14, 2004
CR 226670; Repeat Maintenance - Manual Valve 1RH8734A Internal Leak-by; June 8, 2004
CR 226817; Boric Acid Leakage at 1A RH Pump Seal (Clean); June 8, 2004
CR 248010; 50.59 Screenings Not Performed When They Should Have Been; August 27,2004
CR 239230; Valve 1SX2088B Can Not Be Fully Closed; July 27, 2004

CR 238543; Unit 1 B Essential Service Water Pump Slight Axial Shaft Movement; July 23, 2004
CR 223964; Enter LCO 3.7.8 for Low 1B Essential Service Water Cubicle Cooler Flow; May 26, 2004
CR 242330; 2B Essential Service Water Pump Inboard Bearing Return Line Has Oil Leak; August 6, 2004
Results of Braidwood Maintenance Database Search; Essential Service Water System Work Order Backlog; August 31, 2004

1R05 Fire Protection

Fire Protection Report Section 2.2; Area Designations; Revision 20
Fire Protection Report Section 2.3; Fire Area Analysis; Revision 20
Fire Protection Report Section 2.4; Safe Shutdown Analysis; Revision 20
Fire Protection Report Appendix 5.4; Fire Protection System Description; Revision 20
Engineering Change 41609; Abandonment of Off Gas Filter Plenum & Removal of Filters and Trays; Revision 0
CR 238202; NRC Resident Questions Existence of Carbon in 0OG01S; July 22, 2004 [NRC-Identified]

1R11 Licensed Operator Requalification Program

CR 239795; Effectiveness Review for NRC Identified Simulator Issues; July 28, 2004 [NRC-Identified]
CR 240019; Training Opportunity for Steam Generator Tube Ruptures; July 28, 2004
Licensed Operator Requalification Simulator Scenario Guide; Reactor Coolant Pump Seal Failure/Steam Generator Tube Rupture/Faulted-Ruptured Steam Generator/Emergency Preparedness Drill; Revision 0
Exelon Nuclear Procedure OP-AA-101-111; Roles and Responsibilities of On-Shift Personnel; Revision 1
Exelon Nuclear Procedure OP-AA-103-102; Watchstanding Practices; Revision 2
Exelon Nuclear Procedure OP-AA-103-103; Operation of Plant Equipment; Revision 0
Exelon Nuclear Procedure OP-AA-104-101; Communications; Revision 1
Exelon Nuclear Procedure OP-AA-300; Reactivity Management; Revision 0

1R12 Maintenance Effectiveness

Expert Panel Meeting; DC Power Storage and Distribution; July 31, 2003
Expert Panel Meeting; DC Power Storage and Distribution; October 27, 2003
High Safety Significant Status of In-Scope Functions; DC Power System
High Safety Significant Status of In-Scope Functions; DGs
Maintenance Rule - Expert Panel Scoping Determination; Grounding System
Maintenance Rule - Expert Panel Scoping Determination; DC Power System
Maintenance Rule - Expert Panel Scoping Determination; DGs
Maintenance Rule - Performance Criteria; DC Power System
Maintenance Rule - Performance Criteria; Grounding System; January 1, 2003 through July 30, 2004
Maintenance Rule - Performance Criteria; DGs

Maintenance Rule - Evaluation History; System; Instrument Power; January 1, 2003 through July 22, 2004
Maintenance Rule - Evaluation History; Grounding System; January 1, 2003 through July 30, 2004
Maintenance Rule - Evaluation History; DC Power System; January 1, 2003 through July 30, 2004
Maintenance Rule - Evaluation History; DGs; January 1, 2003 through July 30, 2004
Maintenance Rule - Performance Monitoring Availability Graphs; DGs; July 1, 2002 through June 30, 2004
Quarterly Ship System Report Unit 0; Ground Cathodic Protection; June 1, 2004
Quarterly Ship System Report Unit 0; DC Power Storage and Distribution; June 1, 2004
Quarterly Ship System Report Unit 1; DC Power Storage and Distribution; June 1, 2004
Quarterly Ship System Report Unit 2; DC Power Storage and Distribution; June 1, 2004
Quarterly Ship System Report Unit 1 and 2; DGs; June 1, 2004
Braidwood Archival Operations Narrative Logs; Search Criteria “CVT or inverter”; January 1, 2003, through July 21, 2004
Braidwood Archival Operations Narrative Logs; Search Criteria “DG”; January 1, 2004, through August 31, 2004
System Engineering Notebook
CR 104305; Warm Connections in 212 and 214 Inverters; April 18, 2002
CR 105745; Instrument Inverter 213 Loss of Output, April 28, 2002
CR 107163; Inverter 214 Cooling Fan Found Not Running; May 7, 2002
CR 110555; Instrument inverter Effectiveness Review - Actions Incomplete; June 6, 2002
CR 155919; Loss of Instrument Bus 111 (Reason Unknown); April 26, 2003
CR 157478; System Instrument Power Exceeds Maintenance Rule Performance Criteria - Inverter Failure; May 6, 2003
CR 222148; Unplanned Limiting Condition for Operation Entry due to Loss of Instrument Inverter 114; May 19, 2004
CR 225012; Unit 1 System IP May Have Exceeded Maintenance Rule Reliability; June 1, 2004
CR 231030; Alternating Current Breaker Trip on inverter 213; June 23, 2004
CR 238244; Instrument Inverter 213 Voltage Indicates Below Rounds Minimum Value; July 22, 2004
CR 216865; 2B DG Starting System Malfunction, Unplanned Limiting Condition for Operation; April 25, 2004
Drawing DC-1, 125 VDC [volts DC] System; October 13, 2003; Revision 5
Drawing DC-2, 250 VDC System; May 20, 2002; Revision 1
Drawing 120V AC [alternating current] ESF Instrument Inverter Bus 111 and 113
Drawing 120V AC ESF Instrument Inverter Bus 112 and 114
Drawing 125V AC ESF Distribution Center 111 for Units 1 and 2
Drawing 125V AC ESF Distribution Center 212 for Units 1 and 2
Drawing M-152, Sheet 20, Control Diagram Starting System and Alarms Unit 1 and 2; Revision D
MA-AA-716-004; Troubleshooting Log; Obtain Battery Charger 211 Voltage and Current Readings to Aid in Isolating the Source of Current Oscillations on 211 Charger Output; Revision 2

Results of Braidwood Maintenance Database Search; Unit 1 and 2 DG Work Order Backlog; August 31, 2004
Results of Braidwood Maintenance Database Search; Unit 1 and 2 DG Work Request Backlog; August 31, 2004
Work Order Task 690899-01; DG Speed Switch and Power Supply Replacement; August 9, 2004
Issue Resolution Documentation Form for 2B Emergency DG; May 6, 2004

1R13 Maintenance Risk Assessments and Emergent Work Control

1BwOA INST-2; Operation With a Failed Instrument Channel Unit 1; Revision 101
1BwOA ROD-2; Failure of Rods to Move Unit 1; Revision 54A
1BwOSR 3.1.4.2; Unit One Movable Control Assemblies Surveillance; Revision 7
CR 227987; Rod Control Non Urgent Failure Due to Severe Weather; July 12, 2004
CR 234980; Lightning Strikes Cause Multiple Annunciators on Both Units; July 9, 2004
CR 235027; Urgent Failure on 2BD Power Cabinet; July 9, 2004
CR 233665; Unexpected Rod Control Urgent Failure Alarm; July 3, 2004
CR 236715; NRC Comments Regarding Rod control Urgent Failure; August 15, 2004 [NRC-Identified]
CR 240175; 1PT-0936 Bistable Card Has Degraded Relays; July 30, 2004
CR 243211; Unplanned Limiting Condition for Operation Entry Due to Low Essential Service Water Flow to 2B RCFC; August 10,
CR 243759; 345 kV BTCB 1-8 Compressor Found Running Continuously; August 12, 2004
CR 243969; Comments on Protected Equipment Program Compared to Byron; August 12, 2004 [NRC-Identified]
CR 243976; NRC Comments on 2B DG Post Maintenance Testing for Switch; August 12, 2004
CR 246145; NRC Protected Function Postings and Worker Knowledge; August 20, 2004 [NRC-Identified]
WO 507082 01; Troubleshoot/Repair Unit 1 Rod Control System, Contingency Package; July 12, 2004
Exelon Nuclear Procedure WC-AA-101; On-line Work Control Process; Revision 9
Braidwood's Archival Operations Narrative Logs; August 10 through August 12, 2004
Braidwood PRA [probabilistic risk assessment] Summary Report; Revision 5B
Exelon Nuclear Procedure WC-AA-101; On-line Work Control Process; Revision 10
Unit 0, 1 Risk Assessment; June 28, 2004
Unit 0, 1 Risk Assessment; August 12, 2004
Unit 2 Risk Assessment; August 10, 2004
Unit 2 Risk Assessment; August 11, 2004
Unit 2 Risk Assessment; August 12, 2004
Graph; 1C RCFC Performance Tests; January 1991 through June 2004
Protected Equipment List; 2A DG Work Window; August 10, 2004
Prejob Briefing Handout; Unit 2 D RCFC Thermal Performance Test; July 2, 2004
Fragnet; RCFC Repairs/Testing; July 1, 2004

1R14 Operator Performance During Non-Routine Evolutions and Events

0BwOA ELEC-1; Abnormal Grid Conditions Unit 0; Revision 1
CR 235156; Abnormal Grid Conditions; July 10, 2004
CR 235175; 0BwOA ELEC-1 Requires Changes; July 10, 2004
CR 236257; NRC Question Regarding Risk Assessment of Grid Conditions; July 15, 2004 [NRC-Identified]

1R15 Operability Evaluations

Braidwood's Archival Operations Narrative Logs; after July 3, 2004 and before July 9, 2004
Braidwood's Archival Operations Narrative Logs; August 10, 2004
Braidwood Archival Operations Narrative Logs; 'Lightning' OR 'Arrester;' December 1, 2001 through July 30, 2004
2BwOA PRI-6; Component Cooling Malfunction Unit 2; Revision 102
2BwEP-0; Reactor Trip or Safety Injection Unit 2; Revision 104 WOG 1C
2BwEP-1; Loss of Reactor or Secondary Coolant Unit 2; Revision 104 WOG 1C
2BwEP ES-1.2; Post LOCA Cooldown and Depressurization Unit 2; Revision 103 WOG 1C
2BwEP ES-1.3; Transfer to Cold Leg Recirculation Unit 2; Revision 102 WOG 1C
2BwOA RCP-2; Loss of Seal Cooling Unit 2; Revision 55
BwOP CC-8; Isolation of CC Between Units 1 and 2; Revision 17
BwOP CC-10; Alignment of the "0" CC Pump to a Unit; Revision 16
BwOP CC-14; Post LOCA Alignment of the CC System; Revision 9
2BwOSR 3.6.6.2; Reactor Containment Fan Cooler Surveillance; Revision 11; Completed August 10, 2004
2BwOSR 3.6.6.3-1; Essential Service Water System Flow Balance Surveillance; Revision 0; Completed August 12, 2004
Commonwealth Edison Company; 7.5KVA Inverter Troubleshooting Manual; June 1990; Revision 1
CR 222148; Unit 1 Loss Instrument Bus 114; May 19, 2004
CR 233528; 2D RCFC Flow Instrument Not Responding (2FI-SX125); July 2, 2004
CR 233585; 2SX025D Would Not Throttle Flow Properly; July 2, 2004
CR 234980; Lightning Strikes Cause Multiple Annunciators on Both Units; July 9, 2004
CR 235027; Urgent Failure on 2BD Power Cabinet; July 9, 2004
CR 240421; S Hooks on Dampers Have Been Installed Backwards; July 30, 2004
CR 241401; Rod Control Urgent Failure Alarm Due to Severe Weather; August 3, 2004
CR 241929; Lightning Connection Cable Not Secured on Unit 1 containment Wall; August 5, 2004
CR 242038; Operations Concerns with the Lightning Suppression System; August 5, 2004
CR 243211; Unplanned Limiting Condition for Operation Entry Due to Low Essential Service Water Flow to 2B RCFC; August 10, 2004
CR 243299; Evaluate Containment Chiller Effects on RCFC Flow Balance; August 10, 2004
CR 243358; TS Clarification and SDP Support/Supported Comments; August 10, 2004

CR 243685; NOS [Nuclear Oversight] Identifies Deficiencies in Performance of 2BwOSR 3.6.6.2; August 11, 2004
CR 244336; Instrument Inverter 114 Failed; May 19, 2004
CR 244545; 2B CC Pump Outboard Oil is Very Dark and Cloudy; August 15, 2004
CR 245499; TS Bases 3.6.6 Requires Clarification; August 18, 2004
CR 251694; Dark Oil in 2B CC Pump After Oil Change; September 9, 2004
CR 254622; Sample 1B CC Pump -EOC Review From 2B CC Pump; September 19, 2004
CR 254945; Wrongly Classified Parts for a Safety Related Component; September 20, 2004
CR 255559; Pump Oil Samples Inappropriately Documented; September 12, 2004
CR 257320; Differences Between BwOP CC-8 and 10 and the CC M-Line-Up; September 27, 2004 [NRC Identified]
EC 351403; Assessment of the Effects of Oil Quality on 2B CC Pump Operation; September 24, 2004
Drawing LD-1; Lightning Deterrent System; September 9, 1991
Listing DC Ground Events; DC System Notebook; July 24, 2003
Listing of Fleetwide Lightning Condition Reports; July 15, 2004
Operability Evaluation 04-002 (CR 244335); Instrument Inverter 114 (1IP08E Failed on May 19, 2004; Revision 0
Technical Specifications
Unit 2 2B RCFC Log
Westinghouse Notification of Inverter 3443D72G01 Gating and Synchronization PCB Revision; RRAS-I&OS-04-250; April 14, 2004
WO 654585 01; Unit 1 Containment Building Lightning Protection System Annual Inspection
WO 654586 01; Unit 2 Containment Building Lightning Protection System Annual Inspection

1R17 Permanent Plant Modifications

EC 348152; Relocate Sample Lines for control Room Radiation Monitors - 0PR31J, 0PR32J, 0PR33J and 0PR34J; July 7, 2004
50.59 Review; EC344586 Byron and EC348152 Braidwood; control Room HVAC Outside Air Intake Radiation Monitor Sample Line Reroute Modification
Plant Barrier Impairment Permit 7963; Need to Core Hole in Q-Line Wall at COL Q&11 to Allow Installation of EC#348152; C/O 00692792-05; September 23, 2004

1RST Post-Maintenance and Surveillance Testing - Pilot

1BwOSR 3.7.5.4-1; Unit One Motor Driven Auxiliary Feedwater Pump Surveillance; Revision 7
1BwVSR 5.5.8.AF.1; Unit One Motor Driven Auxiliary Feedwater Pump ASME [American Society of Mechanical Engineers] Quarterly Surveillance; Revision 6
1BwVSR 5.5.8.RH-2; ASME Surveillance Requirements for RH Pump 1RH01PB; Revision 5
2BwVSR 5.5.8.CC.2; ASME Surveillance Requirements for Component Cooling Pump 2CC01PB and Discharge Check Valves; Revision 2

BwFP FH-1; New Fuel Receipt; Revision 11
BwFP FH-2; New Fuel Inspection; Revision 5E1
BwOP AF-5; Motor Driven Feedwater Pump _A Startup on Recirculation; Revision 19
BwOP AF-6; Motor Driven Feedwater Pump _A Shutdown; Revision 13
BwOP DG-11; DG Startup; Revision 27
BwOP DG-12; DG Shutdown; Revision 20
BwOP OG-9; Shutdown of the Hydrogen Recombiners; Revision 11
BwOP OG-9; Shutdown of the Hydrogen Recombiners; Revision 12
BwOP OG-10; Startup of a Hydrogen Recombiner; Revision 14
BwOP OG-10T1; Hydrogen Recombiner Panel Lineup and Parameters; Revision 9
BwOP OG-10T1; Hydrogen Recombiner Panel Lineup and Parameters; Revision 10
BwOP OG-10T2; Hydrogen Recombiner Data Sheet; Revision 8
BwOP RH-5; RH System Startup for Recirculation; Revision 17
2BwOSR 3.8.1.2-1; Unit 2 2A DG Operability Surveillance; Revision 12; Completed August 11, 2004
BwVS 900-8; DG Engine Analysis; Revision 7; Completed August 11, 2004
Exelon Nuclear Procedure MA-AA-716-012; Post Maintenance Testing; Revision 1
WO 551587 01; IM 2PDS-DG086A; GSIN/DG 2A Fuel Filter Switch; Completed August 10, 2004
WO 551588 01; IM 2PDS-DG083A; GSIN/DG 2A Fuel Oil Strainer Differential Pressure Switch; Completed August 10, 2004
WO 551589 01; UN 2ODS0DG085A; GSIN Calibration; DG 2A Air Filter Differential Pressure Switch; Completed August 11, 2004
WO 687048; Unit One Motor Driven Auxiliary Feedwater Pump ASME Quarterly Surveillance; Completed July 9, 2004
WO 688841 01; Primary Containment Type C Local Leakage Rate Tests of Containment Miniflow; July 15, 2004
WO 689710 01; ASME Surveillance Requirements for 1CV01PA; July 13, 2004
WO 690335 05; Post Maintenance Testing for Lifter Adjustment; Replacement (2A DG); Completed August 11, 2004
WO 721714 01; OP 23A DG Operability Monthly Section 5; Completed August 11, 2004
WO 725776 01; Unit 2 Reactor Containment Fan Cooler Monthly Surveillance; August 24, 2004
Project Summary; 1RH01PB On-line Maintenance Work Window
Fragnet; 1B RH RH02; Revision 4
Licensee Memo; Response to Questions Regarding Tamper-Safing of the New Fuel Vaults; August 4, 2004
CR 198159; South Texas Project Engine Failure Applicability to Braidwood's Emergency DGs; January 29, 2004
CR 234976; NRC Comments on 2B DG Post Maintenance Testing for Switch; August 12, 2004 [NRC-Identified]
CR 238380; Procedure Revision did not Revise Other Affected Procedures; July 23, 2004 [NRC-Identified]
CR 238476; OA Hydrogen Recombiner Annunciator Indication; July 23, 2004
CR 240159; Intermediate Flow Mixer Weld Overruns on U1C12 New Fuel; July 30, 2004
CR 240160; Distorted M-Holes Discovered on U1C12 New Fuel Assemblies; July 30, 2004
CR 240300; NRC Concerns With New Fuel Vault Control; July 30, 2004 [NRC-Identified]

CR 247319; NRC Questions on Indicators on Service Water Throttle Valves; August 23, 2004 [NRC-Identified]

1R23 Temporary Plant Modifications

1BwFR-S.1; Response to Nuclear Power Generation/ATWS Unit 1; Revision 1A
1BwOA PRI-2; Emergency Boration Unit 1; Revision 100
1BwOA PRI-15; Loss of Normal Charging Unit 1; Revision 0
1BwOA RCP-2; Loss of Seal Cooling Unit 1; Revision 55
BwOP CV-E1; Electrical Lineup - Unit 1 Operating; Revision 7
BwOP CV-E2; Electrical Lineup - Unit 2 Operating; Revision 6
BwOP CV-M1; Operating Mechanical Lineup Unit 1; Revision 17
BwOP CV-M2; Operating Mechanical Lineup Unit 2; Revision 18
CC-AA-109; Interim Abandoned Equipment Identification, Evaluation and Control; Revision 3
CR 244189; NRC Resident Question on CV Positive Displacement Pump and UFSAR; August 13, 2004 [NRC-Identified]
Drawing M-64; Diagram of Chemical and Volume Control and Boron Thermal Regeneration Byron/Braidwood Stations Unit 1 Commonwealth Edison Company; August 5, 1976
10 CFR 50.59 Safety Evaluation BRW-SE-1997-676; Braidwood's Positive Displacement Pump Out of Service for an Extended Period of Time

1EP6 Drill Evaluation

Emergency Plan 2004 Pre-Exercise; September 15, 2004
CR 248552; Emergency Preparedness Equipment Enhancements from Third Quarter Mini-Drill; August 30, 2004
CR 248553; Emergency Preparedness Issues from 3rd Quarter Mini-Drill; August 30, 2004

2PS2 Radioactive Material Processing and Transportation

Radwaste Shipment RWS04-010; Dewatered Resin Low Specific Activity II; July 16, 2004

4OA1 Performance Indicator Verification

Braidwood's Archival Operations Narrative Logs - Unit 1; Search Criteria "3.7.5"; July 1, 2003, through June 30, 2004
Braidwood's Archival Operations Narrative Logs - Unit 2; Search Criteria "3.7.5"; July 1, 2003, through June 30, 2004
Exelon Nuclear Procedure LS-AA-2060; Monthly Performance Elements for NRC Safety System Unavailability - Reactor Core Isolation Cooling (BWR) or Auxiliary Feedwater (PWR) Systems; Revision 4
Exelon Nuclear Procedure LS-AA-2080; Monthly Data Elements for NRC Safety System Functional Failures; Revision 4

Exelon Nuclear Procedure LS-AA-2090; Monthly Data Elements for NRC Reactor Coolant System Specific Activity; Revision 5
LER 05000457/2003-001-00; Inadequate Enforcement of the Maintenance Fundamentals Results in the Inoperability of the 2A Train of the and Volume Control System for 12 Days; August 18, 2003
LER 05000457/2004-005-00; Setpoint Drift Causes Three Pressurizer Safety Valve Lift Tests to Exceed Specification Tolerance; February 9, 2004
Braidwood's Archival Operations Narrative Logs - Unit 2 - Search Criteria "cv or 3.5.2"; July 9, 2003, through July 21, 2003
Exelon Action Tracking Toolbox Search; System "AF"; July 1, 2003, through June 30, 2004
CR 157367; Entry Into 1BwOA PRI-4 Due to High Reactor Coolant System Activity on 1PR06J; May 5, 2003
CR 219399; Damaged Pressure Switch Diaphragm Causing Oil Leakage; May 7, 2004
CR 238333; Comment Not Included in 2nd Quarter Revised Oversight Process Performance Indicator Submittal; July 23, 2004 [NRC-Identified]
CR 240974; Improper Basis for Operability on Issue 219399; August 2, 2004 [NRC-Identified]

4OA2 Identification and Resolution of Problems

CR 102669; Unit 2 Reactor Coolant System Leak Rate Unexpected Increase; April 6, 2002
CR 104986; Loose Fastener Identified During A2R09 Borated Bolt Examination; April 22, 2002
CR 117142; Rad Rags Wrapped Around Pipe Caps; July 26 2002
CR 118752; 1PI-SI060, Pipe Cap Leaking, 364' U-18 Unit 1 Center Aisle; August 9, 2002
CR 121584; Documentation Error in Borated Bolted Connection Evaluation; September 3, 2002
CR 121949; Excess Dried Boron Accumulation From 1SI161 Vent Valve; September 6, 2002
CR 127845; Chronic Leak on Unit 1 Heat Exchanger 1FC01A; October 16, 2002
CR 129191; Process Issues on Cleaning Boric Acid From Components; October 28, 2002
CR 130177; Uncontaminated Borated Water/Boron Leakage Degrading Components; November 4, 2002
CR 130274; Boron/Borated Water Leakage Identified During Containment Exams; November 3, 2002
CR 130612; Safety Injection System Valves Repeated Evidence of Leaks (Boron); November 4, 2002
CR 134236; Increased Leakage Rate From Line 1PS01BA-3/8"; December 2, 2002
CR 134340; Discoloration/Corrosion of Components From Boric Acid Contamination; December 5, 2002
CR 139440; 1CV110A Has Active Borated Water Leak/Steel Discolored; January 13, 2002
CR 142968; Heat Exchanger 2RH02AB Potential of Boron Corrosion (Bolting); February 4, 2003

CR 144454; Substantial Area of Boric Acid Found During Walkdown; February 12, 2003
CR146468; Boric Acid Inspection Results (Pipe Tunnel No. 2); February 24, 2003
CR 147396; Communication on Boric Acid Control Program Needed to People; March 3, 2003
CR 177498; Brown Boron and Boron Leaks in the Reactor Coolant System; September 25, 2003
CR 180076; Suspicious Substance (May be Boric Acid) in RCFC Outlet Fins; October 8, 2003
CR 180230; NOS Identified Conflicting Boric Acid Corrosion Inspection Frequencies; October 9, 2003
CR 205565; Repair of Heat Exchanger 1FC01A Deferred; March 2, 2004
CR 211143; Boron Discovered on Instrument Air Line; March 26, 2004
CR 213915; Byron B2R11 Boric Acid Corrosion Control Program Issues; April 8, 2004
CR 215922; Permanent Repair of Excess Letdown Heat Exchangers Deferred to A1R12; April 16, 2004
CR 217704; Boric Acid Leakage Repair Deferred to A1R12 (1RH8724A); April 28, 2004
CR 229446; NOS Identified Boric Acid Corrosion Control Training and Qualification Issues; June 17, 2004
CR 229639; Repeat Boric Acid Leaks (Cleaning/Repairs Required); June 18, 2004
CR 229651; 2PS25J Repeat Boric Acid Leakage (Clean/Repair); June 18, 2004
CR 230174; NOS Identifies Untimely, Incomplete and Ineffective CA - Corporate; June 17, 2004
CR232728; Evidence of Dry Boron on Multiple Nuts of 2A RH Heat Exchanger; June 30, 2004
CR 238403; Boric Acid Leakage (Flanged Connection) Clean/Tighten; July 23, 2004 [NRC-Identified]
CR 238448; Dry Boric Acid Leakage (2CS020B, Clean and Tighten); July 22, 2004 [NRC-Identified]
CR 238497; Dry Boric Acid Leakage Identified on Bolting (Clean Only); July 23, 2004 [NRC-Identified]
CR 250275; Spent Fuel Pit Skimmer Filter Leaking Into Filter Vault; September 4, 2004
CR 253740; Four CRs on Water Leaks with Boron Not Routed to [Boric Acid Corrosion Control] BACC Owner; September 4, 2004 [NRC-Identified]
ER-AP-331; BACC Program; Revision 0
ER-AP-331-1001; BACC Inspection Locations, Implementation, and Inspection Guidelines; Revision 0
ER-AP-331-1002; BACC Program Identification, Assessment, and Evaluation; Revision 1
ER-AP-331-1004; BACC Training and Qualification; Revision 0
Engineering Programs Audit Report NOSA-BRW-04-05 (CR 220778); June 11 - 25, 2004
NOL 20-03-036; Nuclear Oversight Review of Reactor Vessel Bottom Visual Examination for Boric Acid During A2R10; November 20, 2003
WO 375631 01; Visual Exam Per Generic Letter 88-05, Surveillance Applicable for All Modes (Class 1); April 8, 2003
WO 380029 01; Examination of Unit 1 Borated Bolted Connection Outside Containment; March 11, 2003

WO 454103 01; Examination of Unit 2 Borated Bolted Connections Outside Containment; October 22, 2003

4OA3 Event Followup

LER 05000456/2004-002-00; 1C Reactor Containment Fan Cooler Discovered to be Inoperable Greater Than Required TS Allowed Outage Time; August 2, 2004
LER 05000456/2004-003-00; 0A Hydrogen Recombiner Identified to be Inoperable Greater Than the Required TS Allowed Outage Time; August 16, 2004
CR 224989; 1FI-SX118 Reading is Suspect (Unplanned Limiting Condition for Operation Entry); May 6, 2004
CR 241558; Reportable Event - Loss of Off-site Siren Capability; August 4, 2004
Root Cause Investigative Report; 0A Hydrogen Recombiner was not Identified by Operations as Being Inoperable due to a Lack of Technical Evaluation Resulting in a 60 Day LER; July 30, 2004
Root Cause Report for CR 224989; July 9, 2004
Power Reactor Event Number 40922; Loss of Emergency Notification due to Inoperable Sirens; August 4, 2004
Power Reactor Event Number 41038; Offsite Notification Due to Minor Oil spill
Status Report; Braidwood/Dresden Storm Failures; August 3-4, 2004
CR 241917; Rising Trend on Unit 1 Containment Noble Gas, August 8, 2004
CR 242913; Active Reactor Coolant System Leak (60 drops per minute) Targets Affected 1PS01BA-0.375", August 9, 2004
CR 244203; 1PS9350A Is Leaking By and Needs to be Repaired, August 13, 2004

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
BACC	Boric Acid Control Coordinator
BwEP	Braidwood Emergency Procedure
BwOA	Braidwood Abnormal Operations Procedure
BwOP	Braidwood Operating Procedure
BwOSR	Braidwood Operating Surveillance Requirement Procedure
CC	Component Cooling
CFR	Code of Federal Regulations
CR	Condition Report
DC	Direct Current
DG	Diesel Generator
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Feature
gpm	Gallons Per Minute
IMC	Inspection Manual Chapter
IR	Inspection Report
LER	Licensee Event Report
NCV	Non-Cited Violation

NEI	Nuclear Energy Institute
NOS	Nuclear Oversight
NRC	Nuclear Regulatory Commission
OSC	Operations Control Center
PARS	Publicly Available Records
RCFC	Reactor Containment Fan Cooler
RH	Residual Heat Removal
SDP	Significance Determination Process
TS	Technical Specification
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
VDC	Volts DC
WO	Work Order