

May 15, 2007

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 05000456/2007003; 05000457/2007003

Dear Mr. Crane:

On March 31, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Braidwood Station, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on March 30, 2007, with Mr. M. Smith and other members of your staff.

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

Based on the results of this inspection, one NRC-identified finding of very low safety significance (Green) is documented in this report. The issue was determined not to involve a violation of NRC requirements.

If you contest the subject or severity of a finding, 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 20555-001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Braidwood Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be 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), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

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

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

Enclosure: Inspection Report 05000456/2007003; 05000457/2007003  
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 Emergency Management Agency  
State Liaison Officer  
Chairman, Illinois Commerce Commission

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Vice President - Operations Support  
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Director Licensing  
Manager Licensing - Braidwood and Byron  
Senior Counsel, Nuclear, Mid-West Regional  
Operating Group  
Document Control Desk - Licensing  
Assistant Attorney General  
Illinois Emergency Management Agency  
State Liaison Officer  
Chairman, Illinois Commerce Commission

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Letter to Christopher Crane from Mark A. Satorius dated May 15, 2007.

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REPORT 05000456/2007003; 05000457/2007003

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000456/2007003; 05000457/2007003

Licensee: Exelon Generation Company, LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, IL

Dates: January 1 through March 31, 2007

Inspectors: S. Ray, Senior Resident Inspector  
G. Roach, Resident Inspector  
M. Garza, Reactor Engineer  
R. Jickling, Senior Emergency Preparedness Analyst  
D. Lords, Reactor Inspector  
M. Mitchell, Health Physicist  
B. Palagi, Senior Operations Engineer  
M. Perry, Illinois Emergency Management Agency (IEMA)

Observers: R. Jones, Reactor Engineer  
A. Bramnik, Health Physicist

Approved by: R. Skokowski, Chief  
Branch 3  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000456/2007003, 05000457/2007003; 01/01/2007 - 03/31/2007; Braidwood Station, Units 1 & 2; Flood Protection Measures.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding, which was not considered a violation of NRC regulations, was identified by the inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 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. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance for failing to maintain the electrical control panel doors for numerous safety-related systems fully latched closed. As a result, the systems were in a degraded condition such that operability of the systems might have been impacted during a seismic or flooding event. The finding had a corrective action cross-cutting aspect in the area of Problem Identification because supervisors and managers failed to identify that plant personnel were not promptly identifying, at a low threshold, that the doors for electrical control panels were not maintained fully closed. Poor standards for the control of the qualification of electrical panels contributed to problems in this area. Corrective actions taken by the licensee included sending operators to walk down the plant to ensure all panel doors were fully latched and writing corrective action documents for all panel doors that have missing or degraded fastening hardware. Tailgate sessions were also held with all operations and maintenance personnel to communicate the expectations for fastening panel doors.

The finding was more than minor because it affected the Mitigating System cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the external factors attribute. The finding was of very low safety significance because it was a qualification deficiency that did not result in loss of operability. Therefore, the finding screened as Green during the Phase 1 Significance Determination Process. No violation of NRC requirements occurred as a result of this finding. (Section 1R06)

### B. Licensee-Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 was operated at or near full power for the entire inspection period except for brief power reductions during feedwater pump swapping activities and turbine steam valve testing.

Unit 2 was operated at or near full power for the entire inspection period with one exception. On March 4, 2007, operators rapidly reduced power to approximately 92 percent power in response to the isolation of the 27A feedwater heater due to level control problems. The problem was corrected and the unit was returned to full power on March 6, 2007.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01)

##### Readiness for Impending Adverse Weather Conditions

##### a. Inspection Scope

The inspectors monitored and reviewed the licensee's preparations for and response to an extended period of extremely cold weather in February 2007. Problems occurred with switchyard breakers, ventilation equipment, security equipment, cooling lake makeup, and other systems. In addition, grid conditions required rescheduling of several production risk jobs. The inspectors verified that minor issues identified during this inspection were entered into the licensee's corrective action program. Documents reviewed as part of this inspection are listed in the Attachment. This inspection constituted one sample of the inspection requirement for site readiness for impending adverse weather conditions.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment (71111.04)

##### .1 Complete Walkdown

##### a. Inspection Scope

The inspectors performed a complete system walkdown of the following system:

- Unit 1 auxiliary feedwater (AF) system.

The AF system was selected because of its high risk-significance at Braidwood.

In addition to the walkdowns, the inspectors reviewed the following documentation to verify that the system was properly maintained in accordance with design basis documents:

- selected operating procedures regarding system configuration;
- the Updated Final Safety Analysis Report (UFSAR), system drawings, and other selected design bases documentation regarding the system; and
- issue reports (IRs) for the system initiated within the last year.

Documents reviewed as part of this inspection are listed in the Attachment. This walkdown represented one inspection sample.

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 lists to determine whether the components were properly positioned and that support systems were aligned as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to determine whether there were any obvious deficiencies. The inspectors reviewed IRs associated with the train to determine whether those documents identified issues affecting train function. The inspectors used the information in the appropriate sections of the Technical Specifications (TS) and the UFSAR to determine whether the licensee had maintained the functional requirements of the system. The inspectors also reviewed the licensee's identification of and controls over the redundant risk-related equipment required to remain in service. Documents reviewed during this inspection are listed in the Attachment.

The inspectors completed two samples of this requirement by walkdowns of the following trains:

- 1B safety injection (SI) pump train in preparation for making train "A" equipment inoperable for setting a freeze seal; and
- 1B diesel generator (DG) train with the 1A DG train unavailable due to planned maintenance.

b. Findings

No findings of significance were identified.



1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and 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. Also reviewed was the revised Individual Plant Examination of External Events, which contained additional insights on selected fire areas that impact equipment potentially causing plant transient or adversely affecting safe shutdown capability. The inspectors used the Fire Protection Report, Revision 22, to determine: 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 completed eleven samples of this inspection requirement during the following walkdowns:

- “A” train essential service water pump room 330 elevation (Fire Zone 11.1A-0);
- “B” train essential service water pump room 330 elevation (Fire Zone 11.1B-0);
- Technical Support Center (Fire Zone 18.26-0);
- “A” train control room ventilation room 451 elevation (Fire Zone 18.4-1);
- “B” train control room ventilation room 451 elevation (Fire Zone 18.4-2);
- Unit 1 lower cable spreading room 439 elevation (Fire Zone 3.2A-D1);
- Unit 2 lower cable spreading room 439 elevation (Fire Zone 3.2A-D2);
- lake screenhouse (Fire Zone 18.12-0);
- auxiliary building general area 426 elevation (Fire Zone 11.6-0);
- radwaste building general area 401 elevation (Fire Zone 14.6-0); and
- auxiliary building general area 364 elevation (Fire Zone 11.3-0).

The inspectors verified that minor issues identified during the inspection were entered into the licensee’s corrective action program. Documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Annual Inspection of Fire Brigade Performance

a. Inspection Scope

The inspectors observed the licensee’s fire brigade response to a simulated fire in the Unit 1 essential service water pump room. The inspector’s evaluation assessed the

following criteria to ensure the licensee's response was in compliance with fire protection requirements:

- number of fire brigade members, including a brigade leader, properly responded;
- protective equipment, including self-contained breathing apparatus, was donned properly;
- fire fighting equipment was adequate and appropriately used at the scene;
- command and control, communications, and procedure usage were appropriate;
- victims and fire propagation checks were conducted;
- fire response was conducted in accordance with training and procedures;
- smoke removal was simulated;
- drill objectives were met;
- emergency action level conditions were discussed; and
- critique conducted by the licensee identified and discussed the same deficiencies identified by the inspectors.

This inspection constituted one sample of the annual requirement. Documents reviewed as part of this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

Internal Flood Protection Features

a. Inspection Scope

The inspectors reviewed Braidwood's flood analysis and design basis documents to identify design features important to internal flood protection and flood protection measures in place to prevent or mitigate effects of internal flooding. The inspectors conducted a review of the 383 foot elevation of the auxiliary building to determine whether the safety-related equipment on that elevation was adequately protected from internal flooding and water spray. This review represented one annual inspection sample. Documents reviewed during this inspection are listed in the Attachment.

b. Findings

Degraded Qualification of Electrical Panels Due to Failure to Secure Door

Introduction: The inspectors identified a Green finding for failing to maintain the electrical control panel doors for numerous safety-related systems fully latched closed.

Description: During several walkdowns of plant areas, the inspectors noted that the licensee's practice was to loosely latch closed the doors for electrical control panels. When there were multiple latches on the electrical control panels, the inspectors identified that only one latch was engaged and the associated hold down bolt was not snugged tight. Based on the number of systems which had panels in this condition, the

inspectors determined that the conditions had become acceptable through tolerance of the practice. Poor standards for the control of the qualification of electrical panels contributed to problems in this area. As a result, the systems were in a degraded condition such that operability of the systems might have been impacted during a seismic or flooding event. In particular, the electrical control panels for the control room ventilation system chillers, 0WO01CA and 0WO01CB were of concern. The panels each have 12 latches with the latches spaced around the perimeter of the panel covers to maintain the panel doors closed. On both panels, only 1 of the 12 latches were engaged, and it was not tightened down. On the "B" train panel, 2 of the 12 latches were actually missing. On the "A" train panel, one of the latches was jammed under the door such that the door was wedged ajar.

On the auxiliary feedwater system, numerous panels for valve handswitch controls had two latches to maintain each panel's door closed. The inspectors examined 16 handswitch panels, and identified that 6 had only 1 of the 2 latches engaged; the other latch was only loosely engaged. Both latches were engaged on the remaining 10 panel doors, but they were all loose. Furthermore, numerous electrical panel doors in other systems were not properly latched, and a few had no latches at all engaged.

The inspectors informed the licensee of the issue, and operators corrected the specific problems with the above panels in a timely manner. The licensee initiated IR 585282 to document the issue. In addition, over the next several days, operators identified and corrected latching deficiencies with other panel doors and initiated numerous IRs for hardware problems. However, no record was kept of the "as found" state of the panels and IRs were only written for panels that could not be properly latched because of broken or missing hardware.

The inspectors did not identify any specific licensee procedure that directed the operators to properly latch the doors fully closed. However, as stated in IR 585282, "NRC Question on Operability Impact of Cabinet Latches," it was important to close and secure all safety-related enclosure doors to ensure the integrity of the seismic qualification of the enclosure. Institute of Electrical and Electronic Engineers (IEEE) Standard 323, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," specified that equipment mounting such as bolts, clamps, etc., be in the same condition as the expected installation when environmental qualification tests are conducted and that any subsequent modifications to that configuration be analyzed. Similar statements were in IEEE Standard 344, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations." In addition, the panel doors were generally designed to be water resistant for sprays and drips when properly secured. For example, the drawing for the control room system chiller control panels, 20 E-0-4790A, stated that the panel enclosures were designed and constructed as National Electrical Manufacturers Association (NEMA) Type 4. This NEMA Type 4 enclosure, as defined in NEMA Publication 250-2003, stated that the enclosures would provide a degree of protection against such things as windblown dust, splashing water and hose-directed water. The drawing showed that 12 latches were installed to maintain the door closed.

Analysis: The inspectors determined that the licensee's failure to securely latch the doors of numerous safety-related electrical control panels closed was a performance

deficiency warranting a significance evaluation. The inspectors reviewed this finding against the guidance contained in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Dispositioning Screening," dated November 2, 2006. The inspectors determined that the licensee's failure to maintain the doors, fully latched closed, for numerous safety-related system electrical control panels, associated with several safety-related systems, including the control room ventilation system chillers and the auxiliary feedwater system, was more than minor because the finding affected the Mitigating Systems cornerstone objective of ensuring the availability and reliability of the control room, auxiliary feedwater and other safety-related systems. Also, the finding was associated with the mitigating systems attribute of external factors.

The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Attachment 1, dated March 23, 2007. The inspectors determined that the finding was a qualification deficiency that did not result in loss of operability. The inspectors answered "No" to all five questions under the Mitigating System cornerstone column of Attachment 1. Specifically, the finding was not a design or qualification deficiency confirmed not to result in loss of function per Generic Letter 91-18; did not represent a loss of system safety function; did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time; did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment designated as risk-significant per 10 CFR 50.65 for greater than 24 hours; did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. Therefore, the issue screened as having very low safety significance (Green).

The finding was related to the cross-cutting area of Problem Identification and Resolution. This finding was associated with the cross-cutting aspect of the corrective action program because supervisors and managers failed to identify that plant personnel were not promptly identifying that the doors were not fully latched closed for numerous safety-related electrical panels. The licensee failed to implement a low threshold for identifying these types of issues because the licensee's standards in the maintaining the qualification of electrical panel had degraded to an unacceptable level.

Enforcement: The inspectors did not identify a specific procedure or regulation that required the operators to securely latch electrical control panel doors. In addition, although the equipment was considered degraded in meeting its seismic and environmental qualification design specifications, all of the safety-related doors were at least loosely closed and thus the equipment was determined to be operable. Therefore, this issue was not a violation of NRC regulatory requirements. This issue was considered a finding of very low safety significance (FIN 05000456/2007003-01; 05000457/2007003-01). The licensee entered the issue into its corrective action system as IR 585282, "NRC Question on Operability Impact of Cabinet Latches," on January 30, 2007.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the operating and simulator tests (required to be given annually per 10 CFR 55.59(a)(2)) administered by the licensee from August 21 through September 29, 2006. 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."

b. Findings

No findings of significance were identified.

.2 Quarterly Review of Testing/Training Activity

a. Inspection Scope

The inspectors observed operating crew classroom training covering proposed revisions to the Radiological Emergency Plan Annex For Braidwood Station.

The inspectors evaluated the training environment in the following areas:

- clarity and formality of the presentation;
- classroom physical environment;
- trainee attentiveness and participation;
- trainee feedback regarding validity of procedure revision; and
- group dynamics.

Licensee performance in these areas was compared to licensee management expectations and guidelines. Documents reviewed are listed in the Attachment. This review constituted one sample of this inspection requirement.

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 selected plant systems. This evaluation consisted of the following specific activities:

- observing the conduct of planned and emergent maintenance activities where possible;
- reviewing selected IRs, open work orders, 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;
- conducting partial walkdowns of the selected system; and
- interviewing appropriate system engineers.

The inspectors also reviewed whether the licensee properly implemented Maintenance Rule, 10 CFR 50.65, for the chosen systems. 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. Documents reviewed in this inspection are listed in the Attachment.

The inspectors completed two samples for this inspection requirement by reviewing the following systems:

- excore neutron monitoring (NR) system subsequent to numerous spurious power deviation alarms late in core life; and
- annunciator (AN) system subsequent to repeated audio and visual faults in the control room annunciator system.

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 upon 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.

Observations of the licensee's daily configuration risk assessment records, operator turnover and plan-of-the-day meetings, and work in progress were used by the inspectors to verify that the following criteria met the requirements of 10 CFR 50.65, "Maintenance Rule." Specifically, the inspectors verified that the equipment configurations were properly listed, protected equipment was identified and controlled where appropriate, work was being conducted properly, and significant aspects of plant risk were being communicated to the necessary personnel.

The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action program. This review determined whether those problems were being entered into the corrective action program with the appropriate characterization and significance. Documents reviewed during this inspection are listed in the Attachment.

The inspectors completed seven samples by reviewing the following activities:

- 2TY-0412S overpower delta temperature card replacement due to failure;
- 0SX063B replacement requiring freeze seal;
- 1A DG emergent governor repairs;
- 27A high pressure feedwater heater normal level control valve emergent repair;
- 1B AF cubicle and oil cooler essential service water return valve packing leak with freeze seal in place to support 0SX063A repairs;
- 0A control room ventilation chiller timer failure subsequent to 0B train operability limitations due to low cooling lake temperature; and
- 1B essential service water (SX) planned out of service coincident to potential cooling lake precipitation event.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors evaluated plant conditions and selected IRs 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 IRs and other documents, to verify that 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. Documents reviewed as part of this inspection are listed in the Attachment.

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

- Operability Evaluation 06-005, "Potential Degradation of Environmentally Qualified Seals on Barton Level and Pressure Transmitters";
- Lube oil pump casing leak on the 2B DG engine;
- Non safety-related prefilters installed in control room ventilation system;
- 10 CFR Part 21 issue identified with spare temperature element for control room ventilation chiller;
- Operability evaluation regarding 2B DG jacket water leak;
- Main steam isolation valve operating experience from the Byron Station; and
- Results of the 2B containment spray (CS) pump sodium hydroxide eductor flow testing.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

Annual Review

a. Inspection Scope

The inspectors conducted a preliminary design review and limited observations of the Unit 1 Digital Electro-Hydraulic Controls upgrade project during this inspection period. The work during this period consisted mainly of cable routing and electrical penetration work. Cable termination and system testing will be completed during future inspection periods and the NRC inspection activities will continue. This activity was not considered an inspection sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post-maintenance testing activities associated with important mitigating systems, barrier integrity, and support systems to ensure that the testing adequately demonstrated system operability and functional capability. The inspectors used the appropriate sections of the TS and UFSAR, as well as work orders for 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. The inspectors determined whether the tests were conducted in accordance with their 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 activities were selected based on their importance in demonstrating mitigating systems capability and barrier integrity. The inspectors verified 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.

Five samples were completed by observing post-maintenance testing of the following components:

- 1A DG start following starting air valve replacements;
- 1B turbine driven main feedwater pump repairs;
- 1B SX pump and valves 1SX016B and 1SX027B work window;
- 2B DG following starting air regulator replacement; and
- 0B diesel-driven fire pump following work window.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed surveillance testing activities associated with important mitigating systems, barrier integrity, and support systems to ensure that the testing adequately demonstrated system operability and functional capability. The inspectors used the appropriate sections of the TS and UFSAR to determine whether the surveillance testing was performed adequately and that operability was restored. 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 were met, and that the results of the tests were properly reviewed and recorded. Activities were selected based on their importance in demonstrating mitigating systems capability, barrier integrity, and the initiating events cornerstones. The inspectors verified 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.

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

- 1A and 1B DG simultaneous start surveillance (Routine);
- 2B solid state protection system (SSPS) surveillance (Routine);
- 2A SI pump ASME test (Inservice Test (IST));
- 1B CS additive flow rate verification test (Routine);
- 2B CS pump ASME (IST); and
- 2A residual heat removal pump American Society of Mechanical Engineers (ASME) test (IST).

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP2 Alert and Notification System Evaluation (71114.02)

a. Inspection Scope

The inspectors reviewed and discussed with corporate Emergency Preparedness (EP) staff records for the operation, maintenance and testing of the Alert and Notification System (ANS) for the Braidwood Station Emergency Planning Zone, to verify that the ANS equipment was adequately maintained and tested during 2005 and 2006 in accordance with emergency plan commitments and procedures. The inspectors reviewed records of 2005 and 2006 preventive maintenance performed on ANS equipment to verify that annual preventive maintenance was completed. Also, the inspectors reviewed samples of 2005 and 2006 non-scheduled maintenance activity records to determine whether equipment troubleshooting and repairs were completed in a timely manner. Additionally, the inspectors reviewed records of ANS tests conducted from August 2005 through December 2006 to determine if Braidwood and corporate EP staffs were effectively using the corrective action program to document, correct, and trend siren problems identified.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

a. Inspection Scope

The inspectors reviewed and discussed procedures on the primary and alternate processes of augmenting the on-shift emergency response organization (ERO). The inspectors also discussed the EP staff's process for maintaining the Braidwood Station's ERO roster and ERO personnel's contact information. The inspectors reviewed records of unannounced off-hours augmentations of the on-shift ERO, which included call-in tests and one drive-in drill conducted August 2005 through December 2006 to determine the adequacy of ERO members' response and the use of the corrective action program for identified response problems. The inspectors reviewed a sample of training records for 24 ERO members, who were assigned to key and support positions to verify that they were currently trained for their assigned positions.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses (71114.05)

a. Inspection Scope

The inspectors reviewed Nuclear Oversight Staff's (NOS) 2005 and 2006 audits of the licensee's EP program to verify that these independent assessments met the requirements of 10 CFR 50.54(t). The inspectors reviewed a sample of records of EP drills and exercises conducted during 2005 and 2006 to verify that these activities were adequately critiqued. Samples of corrective action program records and associated corrective actions were reviewed to determine if weaknesses and deficiencies identified in the following types of self-assessments were adequately addressed: critiques of EP drills and exercises, NOS 2005 and 2006 station EP audits, and Braidwood Station EP staff 2006 and 2007 self-assessments.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed licensee performance during one site emergency preparedness drill in the Technical Support Center. This drill was in conjunction with a Force-on-Force inspection documented in Inspection Report 05000456/2007201; 05000457/2007201. The inspectors observed communications, event classification, and event notification activities by the simulated shift manager. The inspectors also observed portions of the post drill critique to determine whether their observations were also identified by the licensee's evaluators. The inspectors verified that minor issues identified during this inspection were entered into the licensee's corrective action program.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Public Radiation Safety

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

##### a. Inspection Scope

The inspectors continued to monitor the licensee's activities resulting from previous inadvertent leaks of tritiated liquid from the blowdown line to the Kankakee River. The inspection areas included the following:

- routine liquid effluent discharges to the river;
- operation of the pond remediation system;
- operations of and repairs to the remediation system for areas near vacuum breaker one;
- response to increased tritium levels in the secondary plant and cooling lake;
- installation of a remediation system for areas near the oil separator;
- vault liner repairs of vacuum breaker six; and
- weekly/monthly inspections of all of the vacuum breaker pits and remediation pumps.

The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Documents reviewed are listed in the Attachment. This inspection did not constitute a complete sample.

##### b. Findings

No findings of significance were identified.

#### 2PS2 Radioactive Material Processing and Transportation (71122.02)

##### .1 Radioactive Waste System

##### a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system descriptions in the UFSAR, and the 2004 and 2005 Annual Radioactive Effluent Release Reports for information on the types and amounts of radioactive waste (radwaste) generated and disposed. The inspectors reviewed the scope of the licensee's audit/self-assessment activities, with regard to radioactive material processing and transportation programs to determine if those activities satisfied the requirements of 10 CFR 20.1101c and the quality assurance audit requirements of Appendix G to 10 CFR Part 20 and of 10 CFR 71.137, as applicable.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Radioactive Waste System Walkdowns

a. Inspection Scope

The inspectors walked down portions of the liquid and solid radwaste processing systems to verify that these systems were consistent with the descriptions in the UFSAR and in the Process Control Program and to assess the material condition and operability of those systems. The inspectors reviewed the status of radioactive waste process equipment that was not operational and/or was abandoned in place. The inspectors discussed with the licensee the administrative and/or physical controls preventing the inadvertent use of this equipment to ensure that the equipment would not contribute to an unmonitored release path or be a source of unnecessary personnel exposure.

The inspectors reviewed changes to the waste processing system to verify the changes were reviewed and documented in accordance with 10 CFR 50.59 and to assess the impact of the changes on radiation dose to members of the public. The inspectors reviewed the licensee's processes for transferring waste resin into shipping containers to determine if appropriate waste stream mixing and sampling was performed so as to obtain representative waste stream samples for analysis. The inspector also reviewed the methodologies for waste concentration averaging to determine if representative samples of the waste product were provided for the purposes of waste classification in 10 CFR 61.55.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the licensee's methods and procedures for determining the classification of radioactive waste shipments including the use of scaling factors to quantify difficult-to-measure radionuclides. The inspectors reviewed the licensee's most recent radiochemical sample analysis results for each of the licensee's waste streams, and the associated calculations used to account for difficult-to-measure radionuclides. These waste streams consisted of radwaste demineralizer resins, various filter media, and dry active waste (DAW). The inspectors also reviewed the licensee's use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides). The reviews were conducted to verify that the licensee's program assured compliance with 10 CFR 61.55 and 10 CFR 61.56, as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed the licensee's waste characterization and classification program to determine if reactor coolant chemistry data was

periodically evaluated to account for changing operational parameters that could potentially affect waste stream classification and thus validate the continued use of existing scaling factors between sample analysis updates.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Shipment Preparation and Records

a. Inspection Scope

The inspectors reviewed the documentation of shipment packaging, surveying, package labeling and marking, vehicle inspections and placarding, emergency instructions, and licensee verification of shipment readiness for six selected non-excepted radioactive material and radwaste shipments, made between March 2006 and January 2007. The shipment documentation reviewed included:

- B-25 Box Shipped as Low Specific Activity (LSA) - II;
- Spent Resin Shipped as Type B;
- Waste Sludge Resin Shipped as Type B;
- Fuel Pins Shipped as Highway Route Controlled Quantity Type B;
- Spent Resin Shipped as Type A; and
- Tri-nuke Filters Shipped as LSA II.

For each shipment, the inspectors determined if the requirements of 10 CFR Parts 20 and 61 and those of the Department of Transportation (DOT) in 49 CFR Parts 170-189 were met. Specifically, records were reviewed, and staff involved in shipment activities were interviewed to determine if packages were labeled and marked properly, if packages and transport vehicle surveys were performed with appropriate instrumentation, whether survey results satisfied DOT requirements, and if the quantity and type of radionuclides in each shipment were determined accurately. The inspectors also determined whether shipment manifests were completed in accordance with DOT and NRC requirements, if they included the required emergency response information, if the recipient was authorized to receive the shipment, and if shipments were tracked as required by 10 CFR Part 20.

Selected staff involved in shipment activities were interviewed by the inspectors to determine if they had adequate skills to accomplish shipment related tasks and to determine if the shippers were knowledgeable of the applicable regulations to satisfy package preparation requirements for public transport with respect to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and 49 CFR Part 172, Subpart H. Also, the inspectors observed personnel conducting package preparation and surveys on a package containing spent resins in preparation for shipment to a waste processor.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems for Radwaste Processing and Transportation

a. Inspection Scope

The inspectors reviewed selected condition reports, self-assessment and audit reports, along with field observation reports that addressed the radioactive waste and radioactive materials shipping program, since the last inspection to determine if the licensee had effectively implemented the corrective action program and if problems were identified, characterized, prioritized, and corrected. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies, or significant individual deficiencies in problem identification and resolution.

The inspectors also selectively reviewed other corrective action program reports generated since the previous inspection that dealt with the radioactive material or radwaste shipping program, interviewed staff, and reviewed documents to determine if the following activities were being conducted in an effective and timely manner, commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of Non-Cited Violations tracked in corrective action system(s); and
- Implementation/consideration of risk-significant operational experience feedback.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151)

##### .1 Initiating Event Performance Indicators

##### a. Inspection Scope

##### **Cornerstone: Initiating Events**

The inspectors sampled the licensee's performance indicator (PI) submittals for the periods listed below. The inspectors used PI definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 4, to verify the accuracy of the PI data. The following PIs were reviewed for a total of six samples:

##### Unit 1

- unplanned scrams per 7,000 critical hours;
- unplanned scrams with loss of normal heat removal; and
- unplanned power changes per 7,000 critical hours.

##### Unit 2

- unplanned scrams per 7,000 critical hours;
- unplanned scrams with loss of normal heat removal; and
- unplanned power changes per 7,000 critical hours.

The inspectors reviewed licensee IRs, electronic logs, and licensee event reports from January 1, 2006, through December 31, 2006, for each PI area specified above. The inspectors independently re-performed calculations where applicable. The inspectors compared the information acquired for each PI to the data reported by the licensee. Documents reviewed are listed in the Attachment.

##### b. Findings

No findings of significance were identified.

##### .2 Emergency Preparedness Performance Indicators

##### a. Inspection Scope

##### **Cornerstone: Emergency Preparedness**

The inspectors reviewed samples of licensee records associated with the three EP PIs listed below. Inspectors verified that the licensee accurately reported these indicators in accordance with relevant procedures and Nuclear Energy Institute guidance endorsed by the NRC. Specifically, the inspectors reviewed licensee records associated with PI data reported to the NRC for the period June 2006 through December 2006. Reviewed records included: procedural guidance on assessing opportunities for these three PIs,



pre-designated Control Room Simulator training sessions, biennial exercise for 2006, integrated emergency response facility drills, revisions of the roster of personnel assigned to key ERO positions, and results of periodic ANS operability tests. The following PIs were reviewed:

- ANS;
- ERO drill participation; and
- drill and exercise performance.

These activities completed three inspection samples.

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 required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of all items entered into the licensee's corrective action program. This was accomplished by reviewing the description of each new Issue Report and attending selected daily management review committee meetings. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.2 Annual Sample: Recent Unit 1 and 2 Cycles Experienced Fuel Rod Defects

a. Inspection Scope

The inspectors reviewed the licensee response to numerous fuel rod defects experienced on both units covering the time span from operating cycle 10 through cycle 13, the current operating cycle. Each operating cycle covered an 18-month time frame at Braidwood. Fuel assemblies typically resided in the reactor for three operating cycles. Fuel defects have occurred on Braidwood Unit 1 during cycle 11 and Braidwood Unit 2 during cycles 10, 12, and 13. In all instances the defect was identified through normal chemical sampling of reactor coolant system radioactivity and occurred subsequent to a power ascension. Both Braidwood units used Westinghouse 17x17 Optimized Fuel Assemblies.

The inspectors reviewed root cause reports for the cycle 12 and 13 defects, a proprietary Electric Power Research Institute report regarding the cycle 10 and 11 defects, and numerous licensee procedure revisions regarding reactor power

manipulations. The reviews verified that the licensee had properly entered these issues into the station's corrective actions program for resolution.

b. Observations and Assessments

Licensee root cause reports included a detailed analysis of several different potential fuel defect mechanisms including fabrication errors, operations/power history, water chemistry, and foreign material controls. In all instances, when a fuel defect was discovered, the licensee entered procedures which established action level thresholds for continued operation of the plant in a manner that minimized exposure to plant personnel and the public. The licensee performed chemistry analysis of radioisotopes present in the reactor coolant system, to identify the approximate age of the fuel assembly possessing the defect, while the reactor remained at power. During the subsequent refueling outage, the licensee utilized a technique known as in-mast sipping to identify the specific fuel assemblies possessing defective cladding. Once a defective fuel assembly was identified, visual inspections were performed in the spent fuel pool utilizing remote camera equipment to identify the defect location. The visual inspections were able to eliminate potential defect causes such as foreign material impact or cladding to grid spacer fretting, but the inspections could not identify the absolute cause of the fuel defects.

In order to identify the root cause of the defective fuel rods associated with Braidwood Unit 1 cycle 11 and Braidwood Unit 2 cycle 10, the licensee joined with Westinghouse and Electric Power Research Institute and sent five fuel assemblies to a hot cell in Studsvik, Sweden. The five rods included two non-defective rods from Unit 1 cycle 11, one potentially defective rod from Unit 1 cycle 11, a defective rod from Unit 1 cycle 11 and a defective rod from Unit 2 cycle 10. Numerous destructive and non-destructive testing methodologies were employed, resulting in clear visual evidence of fuel pellets in the area immediately adjacent to cladding defects exhibiting a phenomena known as missing pellet surface (MPS). Fuel pellets with MPS possessed an irregular shape with regards to the normal pellet cylindrical shape. This irregularity occurred during the fuel fabrication process. During power ascension, the fuel pellet and cladding would expand at different rates which caused the jagged edges of a pellet with MPS to come into contact with the inner wall of the cladding. In addition, the MPS's location resulted in a local "cold" spot on the cladding wall. Hydrogen in the cladding would preferentially migrate to the cold spot resulting in an embrittled spot in the clad. These two negative impacts of MPS were hypothesized to have worked together resulting in the defects from cycles 10 and 11. The plant conditions in existence during cycles 12 and 13 defects were identical to those of cycles 10 and 11. As a result, the licensee established conservative power ascension threshold values, ramp rates, and soak periods to minimize the effects of pellet cladding interaction. In addition, the fuel vendor established more restrictive fuel pellet integrity criterion and was looking at the next generation quality control inspection methods.

#### 4OA5 OTHER

##### .1 (Closed) Unresolved Item (URI) 05000456/2006004-02; 05000457/2006004-02

During a baseline radiation safety inspection, inspectors identified abnormal radiological restricted area exit electronic dosimetry transaction records related to a condition identified as "Electronic Dosimetry (ED) Reset." The ED Reset condition represented an event when the dosimeter appeared to be non-functioning for a period of time ranging up to 15 minutes. Consequently, it appeared that the electronic dosimeter would not continuously integrate the radiation dose rate in the area and would not alarm when a preset integrated dose was received. The inspectors reviewed the technical cause for this condition, actions taken by the manufacturer, and the radiological impact of the condition. The licensee's technical evaluation demonstrated that the reset event was a very short lived event (fractions of a second). However, the dose integration function was affected by data archival durations set in the software code. The licensee performed additional investigations to determine the specific instances when the ED Reset problem occurred, quantifying the duration that the dosimeter was not functioning and the amount of dose that was not integrated, and completed its evaluation for compliance with the requirements specified in Technical Specification 5.7 "Administrative Controls for High Radiation Areas." From the licensee's data, the inspectors observed that the very brief interruptions were well within the expected operation of the instrumentation and did not represent any violations of NRC requirements. Consequently, the inspectors concluded that the short duration of the power interruption and the minimal amount of dose that might not be integrated does not represent an occurrence in the Occupational Radiation Safety PI as defined in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline." Therefore, this URI is closed.

#### 4OA6 Meetings

##### .1 Exit Meeting

The inspectors presented the inspection results to Mr. M. Smith and other members of licensee management at the conclusion of the inspection on March 30, 2007. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. The only proprietary information reviewed was associated with the fuel inspection report described in Section 4OA2.2, however no proprietary information was discussed in this inspection report.

##### .2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Emergency Preparedness inspection with Mr. T. Coutu on January 25, 2007.
- Licensed Operator Requalification, 71111.11B, with Mr. D. Burton, Licensed Operator Requalification Training Lead Instructor, on February 27, 2007, via telephone.
- Material Processing and Transportation inspection with Mr. G. Boerschig on March 23, 2007.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

T. Coutu, Site Vice President  
G. Boerschig, Plant Manager  
K. Aleshire, Emergency Preparedness Manager  
D. Ambler, Regulatory Assurance Manager  
D. Burton, Licensed Operator Requalification Training Lead Instructor  
M. Cichon, Licensing Engineer  
L. Coyle, Maintenance Director  
G. Dudek, Operations Director  
C. Dunn, Site Training Director  
J. Moser, Radiation Protection Manager  
M. Smith, Engineering Director  
P. Summers, Nuclear Oversight Manager  
T. Tierney, Chemistry, Environmental, and Radioactive Waste Manager

#### Nuclear Regulatory Commission

R. Skokowski, Chief, Reactor Projects Branch 3  
D. Passehl, Senior Risk Analyst

#### Illinois Emergency Management Agency

C. Settles, Head Resident Inspection Nuclear Facility Safety, Illinois Emergency Management Agency

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened

05000456/2007003-01; 05000457/2007003-01	FIN	Degraded Qualification of Electrical Panels Due to Failure to Secure Doors
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#### Closed

05000456/2007003-01; 05000457/2007003-01	FIN	Degraded Qualification of Electrical Panels Due to Failure to Secure Doors
05000456/2006004-002; 05000457/2006004-002	URI	Impact of Nonfunctional Dosimeters on Dose Tracking and Technical Specification Compliance (Section 4OA5.1)

#### 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.

### 1R01 Adverse Weather Protection

Exelon Nuclear Procedure OP-AA-106-1-7-1001; Station Response to Grid Capacity Conditions; Revision 2  
IR 507307; 0A Circulating Water Makeup Pump Tripped Twice; February 3, 2007  
IR 507309; Inadequate Cooling Water Pressure on 0B Circulating Water Makeup Pump; February 4, 2007  
IR 587100; Low Pressure Alarm for Air Circuit Breaker 7-11; February 2, 2007  
IR 587394; 345 Kv (Kilovolts) Breaker 1-8 Low Pressure Alarm; February 4, 2007  
IR 587543; Filtered Water Storage Tank Level indicator Malfunction; February 5, 2007  
IR 587806; 0CF271 - Frozen in the Closed Position; February 5, 2007  
IR 587901; Ventilation/Heat Problems; February 5, 2007  
IR 587949; Outer Vehicle Search Area Gate Stopped in the Open Position; February 6, 2007  
IR 588018; The Barrier System Bollards Would Not Operate in the Normal Manner; February 6, 2007  
IR 588132; Sewage Treatment Lines Frozen Due to Extreme Temperatures; February 6, 2007  
IR 588358; Instrument Maintenance Unable to Work 1T-VX001 Loop Due to Cold Temperatures; February 7, 2007  
IR 588361; 345 Kv Oil Circuit Breaker 4-7 Low Pressure Alarm; February 7, 2007  
IR 589918; Pump is Not Running, Suspect Frozen Discharge Line; February 9, 2007  
IR 592928; IEMA Resident Item #1 on February 16, 2007; February 18, 2007 (IEMA-Identified)  
IR 596389; NRC Identifies Fan Guard Rings on Ground Near 2E Main Power Transformer; February 26, 2007 (NRC-Identified)  
IR 606179; NRC Identified Ladder Stored in the Unit 1 Transformer Yard; March 19, 2007 (NRC-Identified)

### 1R04 Equipment Alignment

BwOP AF-E1; Electrical Lineup - Unit 1 Operating; Revision 11  
BwOP AF-M1; Operating Mechanical Lineup; Revision 10  
BwOP DG-E2; Electrical Lineup - Unit 1 1B Diesel Generator; Revision 3  
BwOP DG-M2; Operating Mechanical Lineup Unit 1 1B Diesel Generator; Revision 13  
BwOP SI-E1; Electrical Lineup - Unit 1 Operating; Revision 9  
BwOP SI-M1; Operating mechanical Lineup; Revision 16  
M - 39; Diagram of Condensate Makeup and Overflow; Revision AW

IR 448672; Hanger for Solenoids 1FSV-AF024-A & B Not Properly Welded; February 1, 2006  
IR 457605; Room Temperature Dropped Below 65 Degrees Fahrenheit During Pump Run; February 23, 2006  
IR 476222; 1A AF Pump Tell-Tail Drain Sight-Glass Full; April 7, 2006  
IR 481529; Check Ball Missing in 1B DG Valve Lifter During Maintenance; April 21, 2006  
IR 512144; 1B AF Pump Selector Switch; July 22, 2006  
IR 512637; AF Battery Procedure Discrepancy Between Byron and Braidwood; July 24, 2006;  
IR 531283; 1B DG Turbo Oil Filter Drain Plug Leaks - 1DG04MB; September 15, 2006  
IR 534719; Potential Missed Tech Spec Surveillance; September 22, 2006  
IR 547083; Potential Calculation Non-Conservatism for Refueling Water Storage Tank Vortexing; October 21, 2006  
IR 551481; Unit 1 Review for Wrong Design Pressure Class From IR 550352; October 28, 2006  
IR 569176; 1B DG Fuel Oil Pump Seal Leakage; December 14, 2006  
IR 569177; 1B DG Pre Lube Oil Pump Seal Leakage; December 14, 2006  
IR 569179; 1B DG 5R Fuel Pump Leakage; December 14, 2006  
IR 569180; 1B DG 1L Fuel Pump Leakage; December 14, 2006  
IR 569889; 1FI-AF017A Indication Near Lower Peg; December 15, 2006

#### 1R05 Fire Protection

IR 577149; NRC Concern - 1SX033 Access Requires High Radiation Area Entry; January 9, 2007 (NRC-Identified)  
IR 578536; Non Appendix R Light Ready Light Not Lit; January 12, 2007 (NRC-Identified)  
IR 592931; IEMA Resident Inspector Identified Item #2; February 18, 2007 (IEMA-Identified)  
IR 592938; IEMA Resident Inspector Identified Item #4; February 18, 2007 (IEMA-Identified)  
IR 592941; IEMA Resident Identified Item #3; February 18, 2007 (IEMA-Identified)  
IR 596823; NRC Questioned Acceptability of Fire Hose on Hose Station # 192 & 195; February 27, 2007 (NRC Identified)  
Braidwood/Byron Fire Protection Report Amendment 22; December 2006  
Fire Protection Report; Figure 2.3-16; Essential Service Water Pump Room; Amendment 22  
Fire Protection Report; Figure 2.3-9; Lower Cable Spreading Room; Amendment 18  
Fire Protection Report; Figure 2.2-28; Lake Screen House; Amendment 6  
Fire Protection Report; Drawing M - 58; Diagram of Fire Protection Portable Carbon Dioxide Fire Extinguishers; Revision D  
Fire Protection Report; Drawing M - 52 Sheet 12; Diagram of Fire Protection Manual Hose Stations Units 1 & 2; Revision F  
Fire Protection Report; Drawing M - 52 Sheet 5; Diagram of Fire Protection at Lake Screen House Units 1 & 2; Revision AG  
Fire Protection Report; Figure 2.3-14; Basement Floor Plan Elevation 364; Amendment 18  
Fire Drill Scenario No. 20.03.21.07; 2SX01PA Motor Fire; March 21, 2007

## 1R06 Flood Protection Measures

IR 585282; NRC Question on Operability Impact of Cabinet Latches; January 30, 2007 (NRC-Identified)

IR 588929; Panel is Missing Securing Clips; February 8, 2007

IR 590141; Junction Box Door is Missing a Latching Screw; February 11, 2007

IR 590143; Warped Door - Latch Will Not Engage; February 11, 2007

IR 593872; Panel 1PL81JA Missing Latch; February 20, 2007

IR 609576; NRC Question on Operability Impact of Cabinet Latches; March 27, 2007 (NRC-Identified)

IEEE Std 323-1983; IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations; September 30, 1983

IEEE Std 344-2004; IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations; June 8, 2005

NEMA Standards Publication 250-2003; Enclosures for Electrical Equipment (1000 Volts Maximum); Copyright 2003

Drawing 20 E-0-4790A; Control Room Refrigeration Unit 0A & 0B Local Control Panel 0WO01CA-C & 0WO01CB-C; Revision C

## 1R11 Licensed Operator Requalification Program

EP-AA-1001; Radiological Emergency Plan Annex for Braidwood Station; Revision 17

IR 580409; Enhancement Opportunity for New Emergency Action Level RU3 for Byron/Braidwood; January 18, 2007

## 1R12 Maintenance Effectiveness

IR 310545; Unit 2 Power Range High Volts Plateau Results Not As Expected; March 9, 2005

IR 327611; Several Annunciators ~ 100 Received on Unit 2 and Common Panels; April 22, 2005

IR 344636; Spurious Power Range Lower Detector Flux Deviation Alarm; June 16, 2005

IR 349657; Unexpected Power Range Flux Deviation Alarms; July 1, 2005

IR 377368; Power Range Flux Deviation Annunciates for Unknown Reason; September 24, 2005

IR 427593; N-35 Drawer Making Buzzing Noise; November 25, 2005

IR 437291; Unit 1 Power Range Channel Deviation Alarm; December 29, 2005

IR 438224; 1-N43 Upper Detector Quadrant Power Tilt Ratio Not As Expected; January 3, 2006

IR 466771; Potential Missed Surveillance Required For Power Range Positive Flux Rate Trip; March 15, 2006

IR 491224; 2PM06J Annunciator Box Will Not Reset; May 18, 2006

IR 479701; AN System Ground Found While Working Line 2002 Trip Alarm; April 17, 2006

IR 500530; 2PM06J Will Not Silence and Comes In On Its Own; June 15, 2006

IR 534512; The Horn Will Not Silence on 2PM06J; September 22, 2006

IR 545095; Unit 2 Post Accident Neutron Monitor B Channel Counts Increasing; October 17, 2006

IR 545441; Venture Electrician Identified Broken Conduit; October 18, 2006  
IR 560424; Audible Horn Would Not Silence on 2PM06J; November 20, 2006  
IR 596199; INY-NR8042B Detector "A" Test Potentiometer Defective; February 26, 2007  
IR 598327; 2PA30J Unexpected Annunciator Alarms During 345 KV Bus 9 Switching;  
March 2, 2007  
IR 600463; 2PA19J V5 Power Supply Failure Alarm; March 7, 2007  
WO 714126-01; Replace transformers T204 and T205 that are humming in N35  
EC 353987; Change Unit 2 Power Range Flux Deviation Alarm to 3%; March 2005  
Maintenance Rule - Evaluation History; MR (Maintenance Rule) System NR  
Maintenance Rule - Performance Criteria; System NR  
Maintenance Rule - High Safety Significant Status Of In-Scope Functions; MR  
System NR  
Maintenance Rule - Expert Panel Scoping Determination; System NR  
Maintenance Rule - Evaluation History; MR System AN  
Maintenance Rule - Performance Criteria; System AN  
Maintenance Rule - High Safety Significant Status Of In-Scope Functions; MR  
System AN  
Maintenance Rule - Expert Panel Scoping Determination; System AN  
BwSR 3.3.1.8-006; Channel Operational Test of Nuclear Instrumentation System Power  
Range N42; Revision 13  
1BwOA Elec-7; Loss of Annunciators; Revision 0  
BwOP SY-6; Placing a 345KV Line in Service; Revision 61  
Switching Order 550330; Revision 1; March 4, 2007  
20E-0-4190; 345KV Switchyard Red Bus Annunciator 0PM03J; Revision J  
20E-2-4154H; Internal/External Wiring Diagram Annunciator Input Cabinet 2PA30J  
Part 8; Revision W  
20E-2-4030AN079; Annunciator System Power Distribution Block Diagram 2PA30J;  
Revision C  
20E-2-4030AN073; Annunciator System Functional Diagram 2PA30J; 2PA31J, 2PA32J;  
2PA19J; Revision D

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

IR 308084-15; Analysis of Heater Drain System Impact on Megawatt Electric Production  
and Reactivity Events January 2003 thru June 2005; February 1, 2007  
IR 553782; 0SX063B Won't Go Closed; November 5, 2006  
IR 577337; Loss of Card for 2TY-0412S in 2PA01J Causes C-4 Rod Stop;  
January 10, 2007  
IR 578958; Control Power Fuse Blew When 0SX063B Given Open Signal;  
January 14, 2007  
IR 590915; Motor Control Center 131X4 NRC Identified Protected Equipment Signs  
Placed Incorrectly; February 13, 2007 (NRC Identified)  
IR 593769; NRC Discrepancies Identified During 1B SX Work Window;  
February 20, 2007 (NRC-Identified)  
IR 593852; Improper "Watch Inspection Log" Utilized on Flood Door SD-157;  
February 20, 2007  
IR 599252; 27A Normal Level Control Valve Failed to Control Level Resulting in High-  
High Isolation; March 4, 2007  
OPΔT WO 577337 Troubleshooting Log; January 10, 2007



BwISR 3.3.1.10-M201; Operational Test and Channel Verification/Calibration for Loops T-0411 and T-0412; Revision 9  
MA-AA-736-610; Application of Freeze Seal to All Piping; Revision 2  
M - 42 Sheet 3; Diagram of Essential Service Water Unit 1; Revision BL  
M - 42 Sheet 4; Diagram of Essential Service Water System; Revision BA  
Protected Equipment 1A diesel generator unavailable; February 1, 2007  
Protected Equipment 1B auxiliary feedwater pump unavailable; February 13, 2007  
Protected Equipment 1SX01PB; February 20, 2007

#### 1R15 Operability Evaluations

IR 505454; Nuclear Industry Advisory on Barton Transmitter Connectors; June 30, 2006  
Vendor Drawing; KSV-46-11; Diesel Generator Lube Oil Schematic; Revision 6  
IR 543540; Increased Leakage On 2B Diesel Generator 10R Jacket Water Inlet Flange; October 13, 2006  
IR 579766; 2B Diesel Generator Engine Lube Oil Pump Leak - 2DG01KB-Z; January 17, 2007  
IR 579950; 2DG01KB-Z Casing Flaw (Characterization); January 17, 2007  
IR 583834; Nuclear Oversight Identified Enhancement Opportunities in Operability determination 07-001; January 22, 2007  
IR 584947; 2B DG (2DG01KB-Z) Engine Lube Oil Pump-No Leakage When Running; January 30, 2007  
IR 589225; Non Safety-Related Ventilation Filters Installed in Safety Related Systems; February 8, 2007  
Byron IR 596540; Stroking of Multiple Main Steam Isolation Valves, Possible Design Basis Issue; February 27, 2007  
IR 597512; OPEX - Carrier Corporation Temperature Sensor Cracks Part 21; February 28, 2007  
IR 599141; Operating Experience Review - Potential Issue When Stroking Main Steam Isolation Valves; March 4, 2007  
Operability Evaluation 06-005 (IR 505454); Potential Degradation of Seals on Barton Level and Pressure Transmitters; Revision 0  
NRC Information Notice 2006-14; Potential Defective External Lead-Wire Connections in Barton Pressure Transmitters; July 10, 2006  
NRC Information Notice 2006-14, Supplement 1; Potential Defective External Lead-Wire Connections in Barton Pressure Transmitters; September 25, 2006  
OP-AA-106-101-1006; Operations Technical Decision Making Supporting Operability Determination 07-001 Regarding 2DG01KB-Z; February 14, 2007  
OP-AA-108-115; 07-002 Operability Evaluation: Non-Safety Related Ventilation Filters In Safety Related Systems; Revision 0  
NRC Event Report 43190; Part 21 Report Chiller Copper Sleeve Cracks Leading to Slow Refrigerant Discharge; February 27, 2007  
1BwGP 100-2; Plant Startup; Revision 25  
BwOP MS-9; Opening the Main Steam Isolation Valves; Revision 6  
20E-1-4030MS01; Schematic Diagram Main Steam Isolation Valve 1A; Revision R  
20E-2-4030MS01; Schematic Diagram Main Steam Isolation Valve 2A; Revision M  
20E-2-4030MS06; Schematic Diagram Loop 2A & 2B Main Steam Isolation Valve Bypass Valves 2MS101A & 2MS101B; Revision F

## 1R17 Permanent Plant Modifications

Project Review Paper; Unit 1 Digital Electro-Hydraulic Upgrade - Non-Outage Work

## 1R19 Post-Maintenance Testing

Byron IR 146475; 2A Diesel Generator Slow Start; February 26, 2003  
IR 385062-06; Equipment Apparent Cause Evaluation; 2A Diesel Generator Slow Start During Performance of Slave Relay Surveillance; November 21, 2005  
IR 575415; 1DG01KA Failed to Achieve Rated Speed & Volts in 10 Seconds; January 4, 2007  
IR 585837; 1A Diesel Generator Failed to Reach Rated Speed & Volts After Repairs; January 31, 2007  
IR 586555; 1DG01KA Tripped on Overspeed on First Start Following Maintenance; February 2, 2007  
IR 587162; 1A Diesel Generator Start Fuel Limit Setting Concern; February 3, 2007  
Nuclear Event Report BY-03-008 Green; Contaminated Governor Oil Causes Diesel Generator Slow Start; April 28, 2003  
IR 594288; NRC Identified Boron Accumulation on 1RH8725A; February 21, 2007 (NRC-Identified)  
IR 596058; Electro Hydraulic Leak Forces Emergency Feed Pump Swap; February 26, 2007  
IR 597484; 1B Feed Pump Work Removes Carded Component; February 28, 2007  
IR 602218; Inaccurate Gauges Installed on 0FP03PB; March 11, 2007  
IR 602221; 0B Fire Pump Coolant Heat Exchanger Leaks - Failed PMT; March 11, 2007  
0BwOS FP.2.2.M-2; Diesel Driven fire Pump Surveillance; Revision 9  
0BwOS FP.3.3.E-12; 0B Fire Pump NFPA (National Fire Protection Association) Test; Revision 5  
1BwVSR 5.5.8SX-2; ASME Surveillance Requirements For 1B Essential Service Water Pump; Revision 6  
1BwOSR 5.5.8sx-1B; Essential Service Water Train "B" Valve Stroke Surveillance; Revision 10  
2BwOSR 3.8.1.2-2; 2B Diesel Generator Operability Surveillance; Revision 17  
2BwOSR 3.3.2.8-611B; Unit 2 ESFAS (Emergency Safety Features Actuation System) Instrumentation Slave Relay Surveillance ("B" Train Automatic Safety Injection -K611)

## 1R22 Surveillance Testing

IR 451462; Boric Acid Deposits Found On 2RH01PA Stud; February 8, 2006  
IR 574940; Timing Data Not Obtained Due To Chart Recorder Malfunction; January 3, 2007  
IR 575415; 1DG01KA Failed to Achieve Rated Speed and Volts in 10 Seconds; January 4, 2007  
IR 589826; 2RH01PA - The 2A Residual Heat Removal Pump Discharge Temperature Spiked at the Pump Start; February 7, 2007  
IR 600532; 2SX2080A Does Not Fully Close; March 7, 2007  
IR 604304; CS Additive Tank Flow Verification Test Invalid; March 14, 2007  
IR 604584; 1B CS Eductor Surveillance Problems; March 15, 2007  
IR 604697; 1B CS Pump Room Clutter After Work Complete; March 16, 2007

1BwOSR 3.8.1.20; 1A and 1B Diesel Generator Simultaneous Start; Revision 2  
2BwVSR 5.5.8.RH.1; ASME Surveillance Requirements for Residual Heat Removal Pump 2RH01PA; Revision 7  
2BwOSR 3.3.1.4-2; Unit Two SSPS, Reactor Trip Breaker, and Reactor Trip Bypass Breaker Bi-Monthly surveillance (Train B); Revision 23  
2BwVSR 5.5.8.SI.1; ASME Surveillance Requirements for the 2A Safety Injection Pump; Revision 4  
BwVSR 3.6.7.5.2; Containment Spray Additive Flow Rate Verification Train "B"; Revision 4  
2BwVSR 5.5.8.CS.2; ASME Surveillance Requirements for 2B Containment Spray Pump and Check Valves 2CS003B, 2CS011B; Revision 6  
20E-2-4031CS06; Loop Schematic Drawing Containment Spray Pump 2B Additive Flow Control System, Panel 2PA34J; Revision C  
M - 2129; Containment Spray System Unit 2; Revision L

#### 1EP2 Alert and Notification System Evaluation

Braidwood Station Off-Site Emergency Plan; Alert and Notification Addendum; January 1994  
Braidwood/Dresden Stations Warning System Maintenance and Operational Report from September 25, 2006 through November 30, 2006  
Exelon Nuclear Issue 00563635; Semi-Annual Review of First Half 2006 Siren Data; November 30, 2006  
Braidwood Off-Site Siren Test Plan; December 2006  
Braidwood Station Monthly Operability Reports for 2006  
Braidwood Station Daily Operability Reports for 2006  
IR 355199; Loss of Greater than 25 Percent of Emergency Sirens for Greater than 1-Hour; July 20, 2005

#### 1EP3 Emergency Response Organization Staffing and Augmentation System

Exelon Nuclear Standardized Radiological Emergency Plan, Section B; Emergency Response Organization; May 25, 2006  
EP-AA-112-100-F-01; Shift Emergency Director Checklist; Revision F  
EP-AA-112-100-F-06; Mid-West ERO Notification or Augmentation; Revision G  
EP-AA-122; Drills and Exercises; Revision 6  
EP-AA-122-1001; Drill and Exercise Scheduling, Development and Conduct; Revision 6  
TQ-AA-113; ERO Training and Qualification; Revision 8  
Braidwood Station Dialogics Data; January 22, 2007  
Braidwood Station ERO Roster; January 4, 2007  
IR 399061; EP Drive-In Drill Failure; November 14, 2005  
IR 473339; EP March Augmentation Drill Marginal Pass; March 22, 2006  
IR 509565; EP Call-In Drill Issues; July 14, 2006  
IR 517235; EP Call-In Drill Issues from the July 24, 2006 Drill; August 6, 2006  
IR 532671; EP Augmentation Drill Issues - Off-Hours Call-In Drill; September 18, 2006

1EP5 Correction of Emergency Preparedness Weaknesses

NOSA-BRW-06-03; Nuclear Oversight Audit of Emergency Preparedness; April 11, 2006  
NOSA-BRW-05-04; Nuclear Oversight Audit of Emergency Preparedness; April 19, 2005  
Braidwood Station 2006 Ingestion Pathway Exercise Evaluation Report; amended January 4, 2007  
Braidwood Station 2007 NRC Baseline Program Inspection Readiness Assessment; December 21, 2006  
Braidwood Station 2006 Emergency Preparedness Graded Exercise Readiness Assessment; July 28, 2006  
IR 519181; Braidwood EP Exercise Objective Failure for Core Damage Assessments; August 8, 2006  
IR 467017; Discovery of Non-Conservative Emergency Action Level Change; March 16, 2006  
IR 474360; Electrical Maintenance Department Respirator Qualifications Below 50 Percent; April 3, 2006  
IR 491446; EP Release in Progress Guidance for Tritium; May 18, 2006  
IR 524724; EP Self-Critique Issues from Third Quarter Drills Included a Missed Wind Shift PI Opportunity; August 28, 2006  
IR 542272; Misunderstanding Regarding NRC Requests for 'Bridge' Calls for Unusual Event; October 10, 2006

1EP6 Drill Evaluation

IR 582913; NRC Questioned the Security Upgrade Impact on Emergency Plan; January 24, 2007 (NRC-Identified)

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

IR 606182; Water Discharging From 1CW104; March 19, 2007

2PS2 Radioactive Material Processing and Transportation

Shipment 05-017; Resin Type A; dated December 5, 2005  
Shipment 05-086; Fuel HRCQ Type B; dated September 9, 2005  
Shipment 06-010; Filters, LSA II; dated February 17, 2006  
Shipment 06-012; B-25 Box LSAll; dated February 20, 2006  
Shipment 06-013; Resin Type B; dated March 9, 2006  
NOSA-BRW-04-04; Chemistry Radwaste and Process Control Program Audit Report; dated May 7, 2004  
NOSA-BRW-06-04; Chemistry Radwaste; Effluent and Environmental Monitoring Audit Report; dated March 31, 2006  
Check-In AT 221892; Blended Wastes Strategy; dated May 18, 2004  
Check-In AT 270741; Check-In Self-Assessment Report; dated March 3, 2006  
Check-In AT 270737; Radwaste Material Condition; dated August 30, 2005  
Check-In AT 286087; Radioactive Material Processing and Transportation; dated August 31, 2005

Check-In AT 399473-02; Liquid Radwaste Program Performance; dated June 20, 2006  
RP-AA-203-1002; Response to Electronic Dosimeter (EPD) Reset Alarms (REMS Error  
Message No. 795); Revision 0  
RP-AA-600; Radioactive Material/Waste Shipments; Revision 10  
RP-AA-600-1001; Exclusive Use and Emergency Response Information; Revision 3  
RP-AA-600-1005; Radioactive Material and Non-Disposal Site Waste Shipment;  
Revision 8  
RP-AA-601; Surveying Radioactive Material Shipments; Revision 6  
RP-AA-602; Packaging of Radioactive Material Shipments; Revision 11  
RP-AA-603; Inspection and Lading of Radioactive Material Shipments; Revision 3  
RP-AA-605; 10 CFR 61 Program; Revision 1  
RP-AP-605; 10 CFR 61 waste Stream Sampling Analysis and Trending for Shifts in  
Scaling Factors; Revision 0  
RP-AP-609; Shipment of Irradiated Nuclear Fuel Elements; Revision 0  
AR 216399; Nuclear Oversight Identified Radwaste Crane Alignment Grid Needed;  
dated April 22, 2004  
AR 272836; Radioactive Shipping Procedure RP-AA-600-1001 Needs Updating; dated  
November 12, 2004  
AR 439450; Radioactive Material Shipment Checklist not Properly Completed; dated  
January 6, 2006  
AR 493277; Contaminated Sealand Leaked Water; dated May 24, 2006  
AR 566243; Nuclear Oversight Identified Possible site Training deficiency to  
NRC Bulletin 79-19; dated December 7, 2006  
AR 580096; Error Discovered in Radiation Protection Shipping Part 61 Spreadsheet;  
dated January 17, 2007  
AR 607567; Lifting device Permissive Light failed to illuminate; dated March 22, 2007  
Assignment 5659504-02; material Processing and Transportation; dated  
January 12, 2007  
Assignment 560608-04; Self-Assessment Radioactive Material Transportation; dated  
February 13, 2007  
Modification Number 359605; Duratek Water Processing System-Radwaste Building;  
dated August 3, 2006  
Modification Number 362056; ALPS 2 Improvements; dated March 19, 2007  
2005 Radioactive Effluent Release Report; dated April 28, 2006  
UFSAR Chapter 11; Radioactive Waste Management; Revision 11

#### 40A1 Performance Indicator Verification

Braidwood 1 4Q/2006 Performance Indicators on NRC.GOV website  
Braidwood 2 4Q/2006 Performance Indicators on NRC.GOV website  
Braidwood electronic logs; January 1, 2006, December 31, 2006  
LS-AA-2110; Monthly PI Data Elements for ERO Drill Participation; July 2006 through  
December 2006  
LS-AA-2120; Monthly Data Elements for NRC Drill/Exercise Performance; July 2006  
through December 2006  
LS-AA-2130; Monthly Data Elements for NRC Alert and Notification System Reliability;  
July 2006 through December 2006  
IR 516942; EP Drills and Exercise Performance; August 28, 2006

#### 4OA2 Identification and Resolution of Problems

IR 161793; Braidwood Unit 1 Exceeded Performance Criterion Due to Fuel Leaker; June 4, 2003  
IR 167974; Post A1R10 Irradiated Fuel Inspection Results (crud issues); July 17, 2003  
IR 185603; Axial Crack in Fuel Pin O-5 from fuel assembly R36S; November 9, 2003  
IR 239010; Braidwood Unit 1 and Unit 2 Post A1R11 Failed Fuel Exams; July 26, 2004  
IR 262623; Leaking Fuel Assemblies Found During A1R11; October 12, 2004  
IR 333300; Complete Initial Braidwood Unit 2 Cycle 12 Failed Fuel Failure Mode and Effects Analysis Root Cause Report; June 30, 2005  
IR 459219; Visual Inspection of Irradiated Fuel Assemblies; February 27, 2006  
IR 547270; Suspect Leaking Fuel Identified During A2R12 -U85V; October 21, 2006  
IR 556692; Braidwood Unit 2 In Chemistry Action Level 2 for Iodine 131; November 11, 2006  
IR 556692-09; Complete Initial Braidwood Unit 2 Cycle 13 Failed Fuel Failure Mode and Effects Analysis Root Cause; December 28, 2006  
NF-AA-400-1000; Fuel Integrity Monitoring; Revision 3  
NF-AP-440; Pressurized Water Reactor Fuel Conditioning; Revision 4  
NF-AA-430; Failed Fuel Action Plan; Revision 5  
2BwOA PRI-4; High Reactor Coolant Activity Unit 2; Revision 100  
Electric Power Research Institute Report; Braidwood Leaking Fuel Root Cause Hot Cell Investigation; February 2007

#### 4OA5 Other Activities

##### Other Inspector-Identified Minor Issues

IR 571535; UFSAR Some Submittal Documents are Non-Compliant to 300 Dots Per Inch; December 20, 2006  
IR 578075; NRC Did Not Accept the Byron/Braidwood UFSAR Submittal; January 11, 2007  
IR 594288; NRC Identified Boron Accumulation on 1RH8725A; February 21, 2007  
IR 599421; Large Nut, Apparently From a Feedwater Hanger, Found on Floor; March 5, 2007  
IR 599535; Rad Waste Tunnel Minerals, Wet Stalactites, From Ceiling; March 5, 2007  
IR 602045; NRC Identified Packing Leak on 2E Main Power Transformer Group 4 System Isolation; March 10, 2007  
IR 602276; NRC Identified Seismic Housekeeping Issue; March 11, 2007  
IR 605061; IEMA Identified Minor Plant Issues; March 16, 2007

## LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
AF	Auxiliary Feedwater
AN	Annunciators
ANS	Alert and Notification system
ASME	American Society of Mechanical Engineers
BwAP	Braidwood Administrative Procedure
BwAR	Braidwood Annunciator Response Procedure
BwOA	Braidwood Abnormal Operating Procedure
BwOP	Braidwood Operating Procedure
BwOSR	Braidwood Operating Surveillance Requirement Procedure
BwVS	Braidwood Engineering Surveillance Procedure
BwVSR	Braidwood Engineering Surveillance Requirement Procedure
CFR	Code of Federal Regulations
CS	Containment Spray
DAW	Dry Active Waste
DG	Diesel Generator
DOT	Department of Transportation
ED	Electronic Dosimeter
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESFAS	Engineered Safeguards Feature Actuation Signal
FIN	Finding
IEEE	Institute of Electrical and Electronic engineers
IEMA	Illinois Emergency Management Agency
IMC	Inspection Manual Chapter
IR	Issue Reports
IST	Inservice Test
KV	Kilo Volts
LSA	Low Specific Activity
MPS	Missing Pellet Surface
MR	Maintenance Rule
NEMA	National Electrical Manufactures Association
NFPA	National Fire Protection Association
NOS	Nuclear Oversight Staff
NR	Nuclear Instrumentation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
Radwaste	Radioactive Waste
SDP	Significance Determination Process
SI	Safety Injection
SSPS	Solid State Protection System
SX	Essential Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item