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NUCLEAR REGULATORY COMMISSION  
REGION III  
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March 21, 2000

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Mr. Oliver D. Kingsley  
President, Nuclear Generation Group  
Commonwealth Edison Company  
ATTN: Regulatory Services  
Executive Towers West III  
1400 Opus Place, Suite 500  
Downers Grove, IL 60515

SUBJECT: BRAIDWOOD INSPECTION REPORT 50-456/200001(DRP); 50-457/200001(DRP)

Dear Mr. Kingsley:

On February 28, 2000, the NRC completed an inspection at your Braidwood Units 1 and 2 reactor facilities. The enclosed report presents the results of that inspection.

During the 5-week period covered by this inspection, your conduct of activities was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and careful radiological work controls.

Based on the results of this inspection, the NRC has determined that one violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1.a of the Enforcement Policy. This Non-Cited Violation is described in the subject inspection report. If you contest the violation or severity level of this 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 Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region III, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

TEO1

O. Kingsley

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In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be placed in the NRC Public Document Room.

Sincerely,

/s/ M. Jordan

Michael J. Jordan, Chief  
Reactor Projects Branch 3

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

cc w/encl: D. Helwig, Senior Vice President, Nuclear Services  
C. Crane, Senior Vice President, Nuclear Operations  
H. Stanley, Vice President, Nuclear Operations  
R. Krich, Vice President, Regulatory Services  
DCD - Licensing  
T. Tulon, Site Vice President  
K. Schwartz, Station Manager  
T. Simpkin, Regulatory Assurance Supervisor  
M. Aguilar, Assistant Attorney General  
State Liaison Officer  
Chairman, Illinois Commerce Commission

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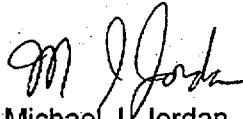
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O. Kingsley

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Sincerely,



Michael J. Jordan, Chief  
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State Liaison Officer  
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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: 50-456/200001(DRP); 50-457/200001(DRP)

Licensee: Commonwealth Edison Company

Facility: Braidwood Nuclear Plant, Units 1 and 2

Location: 35100 S. Route 53, Suite 84  
Braceville, IL 60407-9617

Dates: January 26 through February 28, 2000

Inspectors: C. Phillips, Senior Resident Inspector  
J. Adams, Resident Inspector  
D. Pelton, Resident Inspector  
J. Roman, Illinois Department of Nuclear Safety

Approved by: Michael J. Jordan, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

## EXECUTIVE SUMMARY

### Braidwood Nuclear Plant, Units 1 and 2 NRC Inspection Report 50-456/200001(DRP); 50-457/200001(DRP)

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 5-week period of resident inspection from January 26 through February 28, 2000.

#### Operations

- The inspectors concluded that operators routinely performed good turnover briefings, control board operations, response to alarms, and three-way communications. The control room operators were attentive to critical parameters associated with the systems being tested and kept the unit nuclear station operator and the unit supervisor informed of plant changes. The unit supervisors demonstrated good performance in the minimization of control room distractions, in the direction of personnel, in the conduct of briefings, and in the control of evolutions. (Section O1.1)
- The inspectors observed equipment operators operate the Unit 1 diesel generators during the performance of surveillance tests. The inspectors concluded that the equipment operators properly communicated with the control room and the system engineer, followed the applicable procedures, and were attentive to the operation of the engines. (Section O4.1)

#### Maintenance

- The inspectors observed the performance of five surveillance tests. The inspectors concluded that the surveillance tests adequately tested the system, the operators followed the procedures, and that the procedures included the required testing discussed in the Technical Specifications. (Section M1.1)
- The inspectors concluded that the licensee utilized good maintenance work practices during the performance of various maintenance activities performed on the 1B safety injection system. The inspectors also concluded that the appropriate on-line risk significance had been identified by the licensee for these maintenance activities and that this risk was understood by maintenance and operations department personnel. (Section M1.2)
- The inspectors concluded that actions taken by the licensee in response to the multiple "trouble" alarms associated with the Unit 1 125 volt direct current bus battery charger were appropriate and demonstrated a good safety conscience. The inspectors determined that the battery charger remained operable throughout this event, however, they were concerned with the licensee's untimely documentation of the battery charger operability via a formal operability determination. (Section M1.3)

The license identified that human performance errors resulted in the entry of incorrect information into two different instrument maintenance surveillance test procedures for the calibration of Unit 1 differential temperature/average temperature instrument loops and a source range nuclear instrument. The inspectors concluded that the instruments' operability were not affected. However, since the over temperature differential temperature reactor trip set points were affected, the failure to accomplish the calibration of the associated instruments in accordance with applicable procedure was considered a non-cited violation. (Section M3.1)

## Report Details

### Summary of Plant Status

Unit 1 entered the inspection period at full power and at the end-of-life on the current fuel load. Unit 1 had "coasted down" to approximately 80 percent reactor power by the end of the inspection period. Unit 2 operated at or near full power for the entire inspection period.

## I. Operations

### **O1 Conduct of Operations**

#### **O1.1 Routine Control Room Observations**

##### **a. Inspection Scope (71707)**

The inspectors observed the conduct of operation during normal operating conditions, during the performance of surveillance tests, and during emergent problems associated with the Unit 1 125 volt direct current (DC) bus 112 battery charger. The inspectors interviewed nuclear station operators (NSOs), unit supervisors (USs), and shift managers with regard to the on-going activities.

##### **b. Observations and Findings**

The inspectors observed control room operators at different times throughout the inspection period. The inspectors noted that the NSOs were attentive, used operating procedures, used self-checks when manipulating equipment, obtained peer-checks when required, and used three-way communications. The operators promptly addressed alarms, referred to the annunciator response procedures, and informed supervisors of alarms. During the performance of surveillance tests, operators with specific testing responsibilities demonstrated a heightened-level-of-attentiveness to critical parameters associated with the systems being tested.

The inspectors noted that USs minimized control room distractions, clearly directed personnel, clearly communicated personnel assignments shift briefings, and effectively controlled evolutions. The inspectors generally found supervisors knowledgeable of the unit's status and ongoing activities.

The inspectors determined that the Unit 1 NSOs took appropriate actions when the Unit 1 DC bus 112 battery charger "trouble" annunciator alarmed multiple times in the main control room. The NSOs referred to the appropriate annunciator response procedures, entered the appropriate Technical Specification limiting conditions for operations (LCOs), took appropriate actions as required, and properly logged the alarms in the NSO narrative log.

c. Conclusions

The inspectors concluded that operators routinely performed good turnover briefings, control board operations, response to alarms, and three-way communications. The control room operators were attentive to critical parameters associated with the systems being tested and kept the unit NSO and the US informed of plant changes. The USs demonstrated good performance in the minimization of control room distractions, in the direction of personnel, in the conduct of briefings, and in the control of evolutions.

**O4 Operator Knowledge and Performance**

**O4.1 Equipment Operator Performance During Diesel Generator (DG) Testing**

a. Inspection Scope (71707)

The inspectors observed the performance of equipment operators assigned to run the 1A and 1B DGs during surveillance testing. The inspectors reviewed the following procedures:

- Unit 1 Braidwood Operating Surveillance Procedure (BwOSR) 3.8.1.2-1, "Unit 1 1A DG Operability Monthly and Semi-Annual Surveillance," Revision 1E1;
- 1BwOSR 3.8.1.2-2, "Unit One 1B DG Operability Monthly and Semi-Annual Surveillance," Revision 1E1;
- Braidwood Engineering Surveillance Procedure (BwVS) 900-8, "DG Engine Analysis" Revision 5;
- BwVSR 3.8.1.15-1, "Unit One 1B DG Hot Restart Test, 18 Month," Revision 0;
- Braidwood Operating Procedure (BwOP) DG-1, "DG Alignment to Standby Condition," Revision 10;
- BwOP DG-11, "DG Start Up," Revision 19; and
- BwOP DG-12, "DG Shutdown," Revision 14.

b. Observations and Findings

The inspectors observed equipment operators assigned to operate the 1A DG during the monthly operability surveillance test, and the 1B DG for the monthly operability, the 18 month hot restart, and the pre-outage engine performance surveillance tests. The inspectors determined that the equipment operators followed the appropriate procedures, frequently communicated with the control room and the system engineer, made frequent inspections of the engine, monitored diesel control panel indications, and accurately recorded those indication on log sheets.



c. Conclusions

The inspectors observed equipment operators operate the Unit 1 DGs during the performance of surveillance tests. The inspectors concluded that the equipment operators properly communicated with the control room and the system engineer, followed the applicable procedures, and were attentive to the operation of the engines.

**O8 Miscellaneous Operations Issues (92901)**

- O8.1 (Closed) Licensee Event Report (LER) 50-456/99001-00:** Both Trains of Low Pressure Safety Injection (SI) Declared Inoperable Due to a Gas Pocket in the B/C Cold Leg Injection Piping. While performing a Technical Specification surveillance requirement for venting the high points in the emergency core cooling system (ECCS) piping outside containment, ultrasonic testing revealed a gas pockets in the 1B ECCS train piping, and in a section of discharge piping common to both low pressure SI trains of ECCS. Because all the gas pockets could not be vented, both trains of ECCS were declared inoperable and Technical Specification LCO 3.0.3 was entered on May 16, 1999, requiring a unit shutdown. A Notice of Enforcement Discretion was requested and approved by the NRC on May 16, 1999. The licensee determined that the cause of the gas pockets was leakage of SI accumulator water across check valve 1SI8818D and subsequent evolution of nitrogen. A contributing cause was an operating procedure change that resulted in a reduction in the differential pressure across valve 1SI8818D. Immediate corrective actions included design changes to install vent valves in the common ECCS discharge piping outside containment. This action allowed the ECCS venting surveillance to be completed satisfactorily and the Notice of Enforcement Discretion and the Technical Specification Limiting Condition for Operation exited on May 16, 1999. Additional corrective actions include changes to operating procedures for running the SI pumps on minimum flow or for filling accumulators in a manner such that the differential pressure across the affected check valves is maximized, and the repair of check valve 1SI8818D. The inspectors opened unresolved item 50-456/99007-01(DRP), reviewed the response to the event, verified that adequate corrective actions were taken or would be taken, and closed the item in Inspection Report 50-456/457/99012(DRP), Section O8.4. The event was entered into the licensee's corrective action program as action request 00011185 and the completion of corrective actions are being tracked. Repair of check valve 1SI8818D will be completed during refueling outage A1R08 and is being tracked by work request #990061559. This LER is closed.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### **M1.1 Observation of Miscellaneous Surveillance Activities**

##### **a. Inspection Scope (61726)**

The inspectors observed all or portions of the following surveillance activities:

- 1BwOSR 3.8.1.2-2, "Unit One 1B DG Operability Monthly and Semi-Annual Surveillance," Revision 1E1;
- BwVS 900-8, "DG Engine Analysis" Revision 5;
- BwVSR 3.8.1.15-1, "Unit One 1B DG Hot Restart Test, 18 Month," Revision 0;
- Braidwood Instrument Surveillance BwISR 3.3.1.11-202, "Channel Verification/Calibration of Nuclear Instrumentation System Source Range N32," Revision 3;
- 1BwOSR 3.6.3.5.PR-1, "Process Radiation Containment Isolation Valve Stroke Quarterly Surveillance," Revision 0.

##### **b. Observations and Findings**

The inspectors observed the performance of the five surveillance tests listed above. For each surveillance test, the inspectors observed or reviewed the establishment of initial conditions required for the surveillance test; the operation of equipment; the communications between the licensed operators in the control room and non-licensed operators, maintenance personnel, and engineers; and the restoration of affected equipment. The inspectors determined that each of these activities was performed in accordance with the applicable procedure. The inspectors reviewed the data obtained during the surveillance tests and noted that it met the required acceptance criteria specified in the surveillance test procedures. The inspectors also reviewed the associated portions of the Updated Final Safety Analysis Report and the Technical Specifications and determined that the surveillance test procedures demonstrated the systems performed as designed.

##### **c. Conclusions**

The inspectors observed the performance of five surveillance tests. The inspectors concluded that the surveillance tests adequately tested the system, the operators followed the procedures, and that the procedures included the required testing discussed in the Technical Specifications.

## M1.2 1B SI System Pump Maintenance Observations

### a. Inspection Scope (62707)

The inspectors reviewed the following Braidwood station procedures:

- Work request (WR) 9990079168-01, "Overhaul Limitorque Operator and Replace Spring Pack;"
- WR 9801000209-01, "Change Grease and Perform Inspection of Coupling Internals;"
- WR 980082251-01, "1SI01PB-M Motor Insulation Megger Test from Bus 142, Cub 3;"
- WR 980126167, "1B SI Pump Discharge Relief Valve Replacement;"
- NSWP-G-01, "Preparation and Processing of Work Packages," Revision 4;
- Braidwood Electrical Maintenance Surveillance Procedure BwHS 4002-056, "Electrical Motor Surveillance," Revision 2;
- Braidwood Mechanical Maintenance Surveillance Procedure BwMS 3150-014, "SI Pump Coupling Inspection and Grease Change-out," Revision 3E1;
- Braidwood Maintenance Procedure BwMP 3315-001, "Limitorque Operator Maintenance (Type SB-00 Stem Nut and Actuator Removal/Installation)," Revision 1E1;
- BwMP 3315-002, "Limitorque Operator Maintenance (Type SB-00 Actuator Disassembly/Assembly)," Revision 1E1.

### b. Observations and Findings

The inspectors observed good maintenance work practices during the performance of various maintenance activities performed on the 1B SI system. The inspectors determined that heightened-level-of-awareness meetings were well performed; that the above work packages were properly followed and completed; and that mechanics understood the scope of the work, including system status and associated precautions. The inspectors observed the establishment of required system status and observed the proper use of foreign material exclusion controls and quality control "hold points." The inspectors determined that the proper Technical Specification LCO had been entered and exited and that the control room logs properly reflected the LCO status. Finally, the inspectors determined that the appropriate on-line risk significance had been identified by the licensee for these maintenance activities and that this risk was understood by maintenance and operations department personnel.

c. Conclusions

The inspectors concluded that the licensee utilized good maintenance work practices during the performance of various maintenance activities performed on the 1B SI system. The inspectors also concluded that the appropriate on-line risk significance had been identified by the licensee for these maintenance activities and that this risk was understood by maintenance and operations department personnel.

M1.3 Emergent Unit 1 125 Volt DC Bus 112 Battery Charger Maintenance Observations

a. Inspection Scope (62707)

The inspectors reviewed the following Braidwood station procedures:

- Nuclear Generation Group Work Control Procedure NSP-WC-3010, "Troubleshooting," Revision 0;
- Power Conversion Products Incorporated Instruction Manual, "Three Phase Thyristor Controlled Battery Charger Model 3S-130-400;"
- BwOSR 3.8.6.1-2, "Unit One 125V DC ESF [engineered safety features] Battery Bank and Charger 112 Operability Weekly Surveillance," Revision 0E1;
- BwVSR 3.8.4.6-112, "Unit One 125 Volt ESF Battery Charger 112 Capacity Test," Revision 1; and
- Operability determination for intermittent trouble alarms in the main control room for the Unit 1 DC Bus 112 Battery Charger.

The inspectors discussed the troubleshooting of the Unit 1 125 volt DC bus 112 battery charger with operations and engineering department personnel. The inspectors observed portions of the troubleshooting actions, the establishment of required system status, circuit card replacement, and post-maintenance testing. The inspectors discussed the troubleshooting activities with engineering personnel from the NRC Regional Office, Division of Reactor Safety.

b. Observations and Findings

The inspectors determined that the licensee demonstrated a good safety focus by establishing a "project team" for troubleshooting of a problem identified with the Unit 1, 125volt Dc bus 112 battery charger. The team was headed by licensee management personnel and included personnel from Braidwood Station operations, engineering, maintenance departments as well as individuals from Byron Station and the equipment vendor. The project team provided 24-hour coverage throughout troubleshooting, repair, and testing activities.

The inspectors determined that the battery charger remained operable throughout this event. However, the inspectors were concerned with the fact that the licensee did not

document the continued operability of the battery charger, via a formal operability determination, for approximately 72 hours following the initial receipt of the battery charger trouble alarms in the control room.

The inspectors observed the maintenance activities performed and determined that actions taken were consistent with the troubleshooting action plan and that the troubleshooting action plan was developed in accordance with work control procedure NSP-WC-3010. The inspectors observed the post maintenance testing performed and determined that it was appropriate for the equipment that was replaced and considered its overall impact on the continued proper operation of the battery chargers. Finally, the inspectors determined that the periodic maintenance performed by the licensee on the battery chargers was consistent with the vendor recommended periodic maintenance and in some cases more conservative.

c. Conclusion

The inspectors concluded that actions taken by the licensee in response to the multiple "trouble" alarms associated with the Unit 1 125 volt DC bus 112 battery charger were appropriate and demonstrated a good safety conscience. Although the inspectors determined that the battery charger remained operable throughout this event, they were concerned with the licensee's untimely documentation of continued battery charger operability via a formal operability determination.

**M3 Maintenance Procedures and Documentation**

**M3.1 Inaccurate Information Transcribed to Instrument Maintenance Procedures**

a. Inspection Scope (61726)

The inspectors reviewed the following documents:

- b. PIFs A2000-00444 and A2000-00501;
- c. BwVSR 3.3.1.6, "Incore-Excore Axial Flux Quarterly Calibration," 0E3;
- d. BwISR 3.3.1.10, "Calibration of Delta T [temperature] and T AVE [reactor coolant average temperature] Loops," Revision 0; and
- e. BwISR 3.3.1.11-201, "Channel Verification/Calibration of Nuclear Instrumentation System Source Range N31, Audio Count Rate N34, and Scaler-Timer N34A," Revision 3.

The inspectors also interviewed system engineering personnel.

b. Observations and Findings

Between January 17 and 28, instrument maintenance technicians performed BwISR 3.3.1.10, "Calibration of Delta T and T AVE," on four differential temperature and

average temperature ( $\Delta T/T_{ave}$ ) instrument loops 1T-0411, 1T-0421, 1T-0431, and 1T-0441. On January 28, during the performance of this calibration on the 1T-0411 instrument loop (the last of the four channels to be calibrated), instrument maintenance technicians identified that incorrect values for axial flux differential gain had been provided in the calibration test report for all four  $\Delta T/T_{ave}$  instrument loop calibrations. These values are one of the inputs used in the calculation of the over temperature delta temperature (OT $\Delta T$ ) reactor trip set points. The instrument maintenance department had been provided the current gains by the system engineer, but failed to incorporate them into the procedure.

In response to this event, the licensee updated the  $\Delta T/T_{ave}$  calibration test report with the correct axial flux differential gain values, re-performed BwISR 3.3.1.10 on each of the  $\Delta T/T_{ave}$  instrument loops, performed an operability evaluation to determine the effect of using the incorrect axial flux differential gain values on the OT $\Delta T$  reactor trip set points, and entered the event into their corrective action program with PIF A2000-00444. The inspectors reviewed the licensee's prompt corrective actions and the completed operability evaluation. The inspectors discussed the evaluation's conclusions with system engineering personnel and concurred with the licensee's conclusion that the use of the incorrect values for axial flux differential gain were not a large enough to impact the operability of the OT $\Delta T$  reactor trips.

10 CFR Part 50, Appendix B, Criterion V, states in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. BwVSR 3.3.1.6, Step F.8.5, stated in part, "provide new delta T/T $_{ave}$  (Reactor Coolant Average Temperature) test report package sheets for the updated axial flux differential gain value to instrument maintenance for incorporation into the master test report packages." Contrary to the above, instrument maintenance personnel failed to accomplish the incorporation of the updated axial flux differential gain value into the master test report packages prior to the performance of BwISR 3.3.1.10. This Severity Level IV violation is being treated as a non-cited violation (50-456/4572000001-01(DRP)), consistent with Section VII.B.1.a of the NRC Enforcement policy.

On February 2, during the performance of BwISR 3.3.1.11-201, "Channel Verification/Calibration of Nuclear Instrumentation System Source Range N31, Audio Count Rate N34, and Scaler-Timer N34A," instrument maintenance technicians identified that the incorrect pulse discriminator bias voltage had been provided by system engineers. The licensee's investigation determined that a nuclear engineer had copied the information from the previous calibration of the source range nuclear instrument N-31 instead of obtaining it from the most recent performance of BwVS 3.1.1-3.1, "Source Range Discriminator Plateau Determination and Calibration For N31," as required. The inspectors verified that this event had no impact on operability of nuclear instrument channel N-31 since the incorrect pulse discriminator bias voltage setting was recognized by instrument maintenance personnel before adjustments were made to the instrument. Since the problem was recognized and operability of the instrument was never in question, the inspectors determined that the failure was a violation of minor significance and as such was not subject to formal

enforcement action. The licensee entered this event into their corrective action program with PIF A2000-00501.

c. Conclusions

The license identified that human performance errors resulted in the entry of incorrect information into two different instrument maintenance surveillance test procedures for the calibration of Unit 1 differential temperature/average temperature instrument loops and a source range nuclear instrument. The inspectors concluded that the instruments' operability were not affected. However, since the over temperature differential temperature reactor trip set points were affected, the failure to accomplish the calibration of the associated instruments in accordance with applicable procedure was considered a non-cited violation.

**M8 Miscellaneous Maintenance Issues (92902)**

- M8.1 **(Closed) LER 50-456/99002-00:** Solid State Protection System Slave Relay Response Time Untested Due to Inadequate Procedures. On September 28, 1999, during a licensee review of response time testing, the licensee identified that the slave relay response time of the Solid State Protection System had not been properly verified in accordance with Technical Specification Surveillance Requirement 3.3.2.12. The licensee immediately entered Surveillance Requirement 3.0.3 for the missed surveillance requirement. The licensee made the appropriate procedure changes and re-performed the response time compilation using a bounding response time for the slave relays. The bounding response time was provided by Westinghouse in WCAP-14036-P-A and had been previously approved by the NRC. The results of the re-performed response time compilation met acceptance criteria and the licensee exited Surveillance Requirement 3.0.3 within the allowed 24 hour time period. The licensee determined that an inadequate procedure caused the inadequate testing. The licensee immediately revised the procedures adding allowable time limits for slave relay actuation and satisfactorily performed the procedures on both units. To prevent recurrence, the licensee reviewed all equipment response time procedures used to verify Emergency Safety Feature Actuation System (ESFAS) response time verification. These items are being tracked in the licensee's corrective action program as AR 00016833. The inspectors reviewed the response to the event and verified that adequate corrective actions were taken. This failure to verify ESFAS slave relay response time in accordance with Technical Specifications was a violation of minor significance and as such was not subject to formal enforcement action. This LER is closed

**III. Engineering**

**E8 Miscellaneous Engineering Issues (92903)**

- E8.1 **(Closed) LER 50-456/98004-01:** Main Steam Safety Valves Tested in Excess of Required Setpoint Due to Suspected Metallic Bonding. On September 3, 1998, during setpoint verification testing of Unit 1 main steam safety valves, five valves lifted in excess of their setpoints by greater than the three percent Technical Specification

tolerance. The licensee's root cause investigation suspected metallic bonding between the disc and nozzle seats caused by differences in the coefficient of expansion between the disc and the nozzle. Subsequent vendor analysis of the suspect valves confirmed the metallic bonding between the disc and nozzle seats. Based on the vendor analysis results, an additional corrective action was specified to replace valves exhibiting the sticking phenomenon with valve disc made of a new material, X-750. The licensee also completed a review of past rebuild packages at both Byron and Braidwood to assess differences and their potential effect on the main steam safety valve failures. Based on the results of this review, the licensee has determined that Byron and Braidwood valve lapping processes were similar and no procedure revisions were necessary. The event was entered into the licensee's corrective action program as AR 00003094 and the completion of corrective actions are being tracked. This LER is closed.

- E8.2 **(Closed) LER 50-457/99003-01:** Unit 2 Trip Caused By Spiking Of Intermediate Range Neutron Flux Channel N36 Due To Unknown Reasons. On May 19, 1999, Unit 2 tripped during a reactor startup because of electronic noise spiking on the intermediate range nuclear instrument channel N36. Noise on the Unit 2 N36 channel had been a problem since 1997. The original LER (50-457/99003-00) stated that an analysis of the power isolation transformer from the neutron flux N37 comparator and rate draw and the high voltage power supply for intermediate range neutron flux channel N36 would be performed. As a result of these analyses no faults were identified. The root cause of the spiking indication on intermediate range neutron flux channel N36 remains unknown. Another instrument drawer was prepared for exchange if the problem persists and the detector is scheduled for replacement during the next refueling outage. The inspectors agreed with the licensee's conclusion that there was no human performance error during the reactor startup that lead to the trip. This LER is closed.

## **V. Management Meetings**

### **X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on February 28, 2000. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.



## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

T. Tulon, Site Vice President  
K. Schwartz, Station Manager  
R. Wegner, Operations Manager  
\*L. Guthrie, Maintenance Manager  
A. Haeger, Radiation Protection Manager  
R. Graham, Work Control Manager  
\*T. Simpkin, Regulatory Assurance Manager  
\*T. Luke, Engineering Manager  
\*C. Dunn, Operations Manager  
\*J. Nalewajka, Assessment Manager  
\*C. Herzog, Services Director  
\*M. Riegel, Nuclear Oversight Manager  
\*B. Schramer, chemistry Manager  
\*M. Cassidy, Regulatory Assurance - NRC Coordinator

### NRC

M. Jordan, Chief, Reactor Projects Branch 3  
\*C. Phillips, Senior Resident Inspector  
J. Adams, Resident Inspector  
\*D. Pelton, Resident Inspector

### IDNS

\*R. Schulz  
\*J. Roman

\* Denotes those who attended the exit interview conducted on February 28, 2000.

## INSPECTION PROCEDURES USED

IP 61726: Surveillance Observations  
IP 62707: Maintenance Observation  
IP 71707: Plant Operations  
IP 92901: Followup - Plant Operations  
IP 92902: Followup - Plant Maintenance  
IP 92903: Followup - Engineering

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-456/457/2000001-01      NCV    failure to follow procedure

### Closed

50-456/98004-01      LER    suspected metallic bonding  
50-456/99001-00      LER    inadequate procedure  
50-456/99002-01      LER    inadequate procedure  
50-45799003-00      LER    spiking of intermediate range neutron flux  
50-456/457/2000001-01      NCV    failure to follow procedure

### Discussed

None.

## LIST OF ACRONYMS USED

BwHS	Braidwood Electrical Maintenance Surveillance Procedure
BwISR	Braidwood Instrument Surveillance
BwMP	Braidwood Maintenance Procedure
BwMS	Braidwood Mechanical Maintenance Surveillance Procedure
BwOP	Braidwood Operating Procedure
BwOSR	Braidwood Operating Surveillance
BwVSR	Braidwood Engineering Surveillance Procedure
CFR	Code of Federal Regulations
DC	Direct Current
DG	Diesel Generator
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Features
ESFAS	Engineered Safety Features Actuation System
LCO	Limiting Condition of Operations
LER	Licensee Event Report
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulations
NSO	Nuclear Station Operator
PIF	Problem Identification Form
SI	Safety Injection
Tave	Reactor Coolant Average Temperature
US	Unit Supervisor
WR	Work Request