

LICENSEE EVENT REPORT (LER)

Facility Name (1) Braidwood, Unit 1 Docket Number (2) 0 5 0 0 0 4 5 6 Page (3) 1 of 0 4

Title (4) Loss of Offsite Power Due to Inadvertant Deluge System Actuation Resulting From a Mispositioned Valve

| Event Date (5) |     |      | LER Number (6) |                   |                 | Report Date (7) |     |      | Other Facilities Involved (8) |                                |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|--------------------------------|
| Month          | Day | Year | Year           | Sequential Number | Revision Number | Month           | Day | Year | Facility Names                | Docket Number(s)               |
| 0 9            | 1 1 | 8 7  | 8 7            | 0 4 8             | 0 2             | 0 5             | 1 6 | 8 8  | NONE                          | 0 5 0 0 0 1 1<br>0 5 0 0 0 1 1 |

OPERATING MODE (9) 4

POWER LEVEL (10) 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

|  |   |   |  |
|--|---|---|--|
| <input type="checkbox"/> 20.402(b)         | <input type="checkbox"/> 20.405(c)        | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | <input type="checkbox"/> 73.71(b)                                      |
| <input type="checkbox"/> 20.405(a)(1)(i)   | <input type="checkbox"/> 50.36(c)(1)      | <input type="checkbox"/> 50.73(a)(2)(v)             | <input type="checkbox"/> 73.71(c)                                      |
| <input type="checkbox"/> 20.405(a)(1)(ii)  | <input type="checkbox"/> 50.36(c)(2)      | <input type="checkbox"/> 50.73(a)(2)(viii)          | <input type="checkbox"/> Other (Specify in Abstract below and in Text) |
| <input type="checkbox"/> 20.405(a)(1)(iii) | <input type="checkbox"/> 50.73(a)(2)(i)   | <input type="checkbox"/> 50.73(a)(2)(viii)(A)       |  |
| <input type="checkbox"/> 20.405(a)(1)(iv)  | <input type="checkbox"/> 50.73(a)(2)(ii)  | <input type="checkbox"/> 50.73(a)(2)(viii)(B)       |  |
| <input type="checkbox"/> 20.405(a)(1)(v)   | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(x)             |  |

LICENSEE CONTACT FOR THIS LER (12)

Name Randy Dortch, Technical Staff Engineer Ext. 2487 TELEPHONE NUMBER 8 1 5 4 5 8 - 2 8 0 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS |
|-------|--------|-----------|---------------|---------------------|-------|--------|-----------|---------------|---------------------|
|       |        |           |               |                     |       |        |           |               |                     |

SUPPLEMENTAL REPORT EXPECTED (14)

Yes (if yes, complete EXPECTED SUBMISSION DATE)  NO

Expected Submission Date (15) \_\_\_\_\_

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

At 1425 on September 11, 1987, during the performance of a deluge system surveillance, both system auxiliary transformers tripped. The deluge system actuated as a result of a misposition auxiliary drain valve. This resulted in a loss of offsite power. Investigation as to the source of the mispositioned valve revealed no specific reason for the valve manipulation or documentation other than a previous unrelated surveillance. The unit normal AC power lineup was restored at 1518 on September 11, 1987. All Engineered Safety Feature Systems operated as designed. To prevent recurrence, the procedure for the surveillance has been changed to ensure the auxiliary drain valve is in its correct position prior to opening the main drain valve. Also, the transformer trip associated with the deluge has been removed. The common drain line has been evaluated for system interaction. Additionally, it was discovered that it is possible to inadvertently actuate the deluge system at the local electrical switch. A mechanical guard is being added to prevent this from occurring.

There have been no previous occurrences.

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| TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [xx] |                               |                |                   |                 |       |          |  |

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 1; Event Date: September 11, 1987; Event Time: 1415  
 MODE: 4 - Hot Shutdown; Rx Power: 0%; RCS [AB] Temperature/Pressure: 337°F/338 psig

B. DESCRIPTION OF EVENT:

There were no systems or components inoperable at the beginning of the event which contributed to the severity of the event.

At 1415 on September 11, 1987, during the performance of 0Bw0S FP-Q2, Automatic Deluge Systems Main Drain Test Quarterly Surveillance, the deluge [KP] for the System Auxiliary Transformer (SAT) [EA] 142-1 actuated. The deluge system actuation caused the eighty-six lockout relay to actuate, which causes both SATs to be electrically isolated from the 345 KV switchyard and the 6.9 and 4 KV buses from the unit. The result was a loss of offsite power to Unit 1. The Emergency Diesel Generators [EK] automatically started and supplied power to the emergency buses. The Engineered Safety Feature [JE] loads sequenced on to the emergency buses as designed.

Operators responded in an expeditious and professional manner. The required entry into 1Bw0A Elect-4, Loss of Offsite Power in Modes 3 and 4, was made.

At 1518 on September 11, 1987, the unit was returned to its normal electrical lineup. All systems operated as designed throughout the recovery.

The appropriate NRC notification via the ENS phone system was made at 1512 on September 11, 1987, pursuant to 10CFR50.72(b)(2)(11).

This event is being reported pursuant to 10CFR50.73(a)(2)(iv) - Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the reactor protection system.

C. CAUSE OF EVENT:

The Fuel Handlers (non licensed personnel) performing 0Bw0S FP-Q2 caused the actuation as a result of system interaction due to a mispositioned auxiliary drain valve on SAT 142-1 deluge system prior to the performance of the surveillance. The Fuel Handlers performing the surveillance on September 11, 1987, were doing so in accordance with the procedure and did not open the auxiliary drain valve for SAT 142-1.

The source of the mispositioned auxiliary drain valve was investigated with the following results. A review of the surveillance history verified that no surveillances had been performed on the deluge system associated with this event since August 20, 1987. A review of the work history verified that no work had been performed on the deluge system associated with this event since the surveillance was performed on August 20, 1987. Discussions with the personnel involved with the August 20, 1987 surveillance stated that the procedure was in-hand and being followed. An Operating Shift Foreman was supervising the surveillance and also stated that the procedure was followed and felt that the valve was left in the closed position required by the procedure.

There were no seal wires or other devices to prevent operation of the valve or to identify that it was mispositioned. With the auxiliary drain valve open the SAT 142-1 deluge system was then interconnected through a common drain header with the other transformer deluge systems. When the Fuel Handlers opened the main drain valve for one of the Unit 1 Main Power Transformers, [EL] the deluge system water pressure built up in the common drain header causing a pressure spike for the SAT 142-1 deluge system. This resulted in the actuation of a pressure switch designed to sense deluge system actuation for SAT 142-1. This pressure switch then energized the previously mentioned eighty-six lockout relay, resulting in the electrical isolation of both SAT's.

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Therefore, it has been concluded that the valve mispositioning either:

1. Occurred on August 20, 1987, during the performance of a surveillance, although it was stated that the procedure was followed and hence the valve was left in the closed position, or
2. Occurred between August 20, 1987 and September 11, 1987, although no activities have been identified which would have resulted in manipulation of the valve and no documentation exists which supports this theory.

D. SAFETY ANALYSIS:

There was no effect on plant or public safety. Both diesel generators automatically started and the Engineered Safety Feature loads sequenced on in accordance with design. The Unit 2 SATS were available to supply offsite AC power during the event. The Unit was shutdown and remained stable throughout the event. A loss of offsite power concurrent with a design basis event is enveloped by the FSAR safety analysis.

E. CORRECTIVE ACTIONS:

The immediate corrective action was entry into 1BWOA ELEC-4 and the restoration of normal power to Unit 1. This action was completed on September 11, 1987 at 1518. Also, procedure 0BwOS FP-Q2 was changed prior to allowing the surveillance to continue in order to prevent recurrence.

Actions Taken to Prevent Recurrence:

1. The procedure 0BwOS FP-Q2 was changed via a temporary procedure change to ensure all the transformer auxiliary drain valves associated with the deluge system are verified closed prior to commencing the activity. A permanent procedure revision has been submitted for 0BwOS FP-Q2. This will be tracked to completion by item 456-200-87-31301.
2. Lead seal wires have been added to the auxiliary drain, alarm test and alarm shutoff valves. Additionally, procedure 0BwOS FP-M9 has been initiated to verify the lead seal wires are in place and the valve lineup is correct. The frequency of this surveillance will be monthly at this time. This action will be tracked to completion by item 456-200-87-31302.
3. A new sign has been added to the area associated with the deluge system in this report, requiring both Shift Engineer and Station Control Room Engineer permission prior to entry into the area.
4. As a result of the investigation of this event, it was discovered that it was possible to inadvertently actuate the deluge system locally due to the physical positioning of the electrical actuating switch. A mechanical guard is being added to the switches to prevent this from occurring. This will be tracked to completion by item 456-200-87-31303.
5. The transformer trip associated with this event was unique to Braidwood and Byron Stations. An engineering evaluation determined that the trip could be removed. The deluge trip has been removed from all the Braidwood Unit 1 and Unit 2 transformers.
6. The common drain line has been evaluated for either installation of check valves in the auxiliary drain lines or cutting the drain line. The intent for either of the above was to prevent system interaction. It has been determined that neither of these actions is necessary since the transformer trip associated with the deluge has been removed. Also the normal valve lineup prevents system interaction. Therefore, no further action is required.

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F. PREVIOUS OCCURRENCES:

There have been no previous occurrences.

G. COMPONENT FAILURE DATA:

No components failed as a result of or during this event.



**Commonwealth Edison**  
Braidwood Nuclear Power Station  
Route #1, Box 84  
Braceville, Illinois 60407  
Telephone 815/458-2801

BW/88-422

May 19, 1988

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you as a Supplemental Report to LER 87-048-00.

This report is number 87-048-02; Docket No. 50-456.

Very truly yours,

R. E. Querio  
Station Manager  
Braidwood Nuclear Station

REQ/PMB/jab  
(7115z)

Enclosure: Licensee Event Report No. 87-048-02

cc: NRC Region III Administrator  
NRC Resident Inspector  
INPO Record Center  
CECo Distribution List

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