

Commonwealth Edison Company
Braidwood Generating Station
Route #1, Box 84
Braceville, IL 60407-9619
Tel 815-458-2801



June 15, 2000
BW000067

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Unit 2
Facility Operating License No. NPF-77
NRC Docket No. STN 50-457

Subject: Submittal of Supplemental Licensee Event Report Number 2000-003-01

License Event Report (LER) number 2000-003-00 was submitted on May 16, 2000 to report a reactor trip of Braidwood Unit 2 due to manually opening the reactor trip breakers as result of a failure of the Detector / Encoder Card in the Digital Rod Position Indication System. As part of that LER, Braidwood Station stated the root cause was not complete and indicated a supplemental LER would be submitted if, upon completion of the root cause report, any changes where necessary. The root cause investigation has subsequently been completed. Enclosed is the updated LER.

Should you have any questions concerning this letter, please contact Mr. T. W. Simpkin, Regulatory Assurance Manager, at (815) 458-2801, extension 2980.

Respectfully,

A handwritten signature in black ink, appearing to read "T. Tulon", is written over the printed name.

Timothy J. Tulon
Site Vice President
Braidwood Station

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station

JE22

NRC FORM 366 (4-95)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT
LICENSEE EVENT REPORT (LER)		EXPIRES 04/30/98

FACILITY NAME (1) Braidwood, Unit 2	DOCKET NUMBER (2) STN 05000457	PAGE (3) 1 of 4
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TITLE (4)
Manually Opened Reactor Trip Breakers Due to Detector / Encoder Card Failure In Digital Rod Position Indication System

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 NAME	DOCKET NUMBER
04	16	2000	2000	003	01	06	15	2000	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)
POWER LEVEL (10)	0.0	

<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	73.71(b)
<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(c)
<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	OTHER
<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(vii)	(Specify in Abstract below and in Text, NRC Form 366A)	
<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		
<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		
<input type="checkbox"/>	20.2203(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)	
NAME Mike Hoffman, Root Cause Investigator	TELEPHONE NUMBER (Include Area Code) (815) 458-2801 x-2760

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	
X	AA	DET/ECD	W120	N						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

While withdrawing Shutdown Bank B rods during a Braidwood Unit 2 restart on 4/16/2000, the operator noted Digital Rod Position Indication (DRPI) for rod G13 jump from 18 to 210 steps. With the plant in Mode 3 and with the reactor trip breakers closed, the operator declared DRPI for rod G13 inoperable and immediately opened the reactor trip breakers.

Investigation of the problem determined that either the Data A or Data B Detector / Encoder Card for rod G13 was the source of the problem. Instrument Maintenance Department (IMD) personnel replaced both cards and a partial DRPI operability surveillance was run to verify rod G13 was operable.

Corrective actions included replacing the Data A Detector / Encoder Card a second time for rod G13, and re-performance of the operability surveillance prior to Unit start-up. Other Corrective actions to be taken include: review of TRM requirements for possible changes in the requirements for opening the reactor trip breakers, scheduling of periodic DRPI Dynamic Card Testing and conduct of an Effectiveness Review.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv).

Plant Conditions Prior to Event:

Unit: Unit 2 Event Date: 4/16/2000 Event Time: 0416 hours
 MODE: MODE 3 Reactor Power: 0.0 percent RCS [AB] Temperature: 557 degrees F.
 RCS [AB] Pressure: 2238 psig

B. Description of Event:

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

On 4/15/2000, Braidwood Unit 2 tripped due to a negative rate trip caused by a dropped rod. Subsequent troubleshooting identified a blown fuse in the Stationary Gripper circuit (AA). The fuse was replaced and a Unit 2 restart was commenced at 0400 on 4/16/2000. While withdrawing Shutdown Bank B (SBB) rods (JD), the operator noted Digital Rod Position Indication (DRPI) (IU) for rod G13 jump from 18 to 210 steps. With the plant in Mode 3 and with the reactor trip breakers (JD) closed, the operator declared DRPI for rod G13 inoperable and immediately opened the reactor trip breakers. Technical Requirements Manual (TRM) Limiting Condition for Operation (TLCO) 3.1.g was entered and a 4 hour ENS notification was made due to manually opening the reactor trip breakers.

Initial investigations and discussions with operators could not isolate the problem to either DRPI Data A or Data B. The Instrument Maintenance Department (IMD) commenced troubleshooting which resulted in replacing both the Data A and Data B Detector / Encoder (D/E) cards associated with rod G13. The removed D/E cards were then statically tested with no failures or problems being observed. However, the static test box is limited in its ability to detect intermittent problems or degraded conditions, but it is the only means presently available to test the D/E cards.

The reactor trip breakers were closed and a partial DRPI operability surveillance was completed for the SBB rods only, and the results were satisfactory. A complete DRPI operability surveillance with Control Rod Drive Mechanism (CRDM) (AA) timing to verify operation of the Rod Control and DRPI systems was performed satisfactorily prior to restart. During these surveillances the operators again noted rod G13 was operating differently from the other SBB rods. While all other SBB rods moved out to 12 steps (by DRPI), rod G13 lagged behind at 6 steps. Although this is still within the acceptable TRM limits, SBB rods were reinserted. IMD replaced the Data A Detector / Encoder Card for rod G13 a second time to correct the indication problem. The removed D/E card was

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satisfactorily tested on the static test box. DRPI Operability testing was completed satisfactorily (for SBB rods) and the Unit restart was completed.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System."

C. Cause of Event:

The root cause report attributed the failure mode to a Detector / Encoder card associated with Rod G13, based on satisfactory testing after card replacement. The failure or degraded condition cannot be confirmed in any of the cards replaced. Corrective action to prevent recurrence will be to implement periodic dynamic card testing once the test equipment is available.

D. Safety Analysis:

There were no safety consequences associated with this event. No automatic actions are initiated by the failure of the DRPI System. Manual actions which may be prompted by the failure of the DRPI System are not credited by the accident analyses. Additionally, automatic actions assumed by the analyses are not affected by the failure of the DRPI System. In Mode 3, the DRPI System provides control rod indication to support rod withdrawal in preparation for reactor criticality.

There was no Safety System Functional Failure as a result of this event.

E. Corrective Actions:

Immediate Corrective Actions:

- TLCO 3.1.g was entered and the reactor trip breakers were manually opened.
- A 4 hour ENS notification was made due to manually opening the reactor trip breakers.
- IMD personnel performed troubleshooting and replaced both the Data A and Data B Detector / Encoder Cards for shutdown rod G13.

Long Term Corrective Actions

- The Data A Detector / Encoder Card was replaced a second time for rod G13 and the operability surveillance was re-performed prior to Unit start-up.
- Scheduling of periodic DRPI Dynamic Card Testing.
- Conduct of an Effectiveness Review.
- Review of TRM requirements for possible changes in the requirements for opening the Reactor Trip Breakers

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F. Previous Occurrences:

<u>LER Number</u>	<u>Title</u>
97-02-02.	Manually Opened Reactor Trip Breakers Due to Decoder and Encoder Control Card Failure.

This LER (2000-002-00) is a repeat occurrence of LER 97-02-00. Corrective actions pertaining to dynamic card testing remain open for LER 97-02-00.

G. Component Failure Data:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
Westinghouse	Standard Decoder & Encoder Control Card	GO1	1468F06G01