

LICENSEE EVENT REPORT (LER)

Facility Name (1) Braidwood, Unit 2										Docket Number (2) 0   5   0   0   0   4   5   7   1   of   0   3					Page (3) 1 of 0 3			
Title (4) Inadequate Capacitor Connection Results in Degraded Instrument Bus Voltage and Subsequent Reactor Trip																		
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   2	2   0	8   8	8   8	---	0   2   4	---	0   0	0   3	1   7	8   8	NONE				0   5   0   0   0   1   1			
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)															
POWER LEVEL (10) 0   0   0			20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)			
			20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)			
			20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				Other (Specify			
			20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				in Abstract			
			20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)				below and in			
			20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)				Text)			
LICENSEE CONTACT FOR THIS LER (12)																		
Name Harold Hill, Technical Staff Engineer										TELEPHONE NUMBER AREA CODE 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	MANUF- TURER	REPORTABLE TO NPRCS				CAUSE	SYSTEM	COMPONENT	MANUF- TURER	REPORTABLE TO NPRCS						
X	A	A	C   A   P   *	G   0   8   0	NO													
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 fifteen single-space typewritten lines) (16)																		

At 0626 on February 20, 1988, during the performance of startup test AWSU RD-70, there was a loss of power to Instrument Bus 212. This resulted in a reactor trip signal being generated, and caused the reactor trip breakers to open. This loss of power also caused a boron dilution protection system actuation. An equipment operator was sent to the bus and he re-energized it from its constant voltage transformer. Action to prevent recurrence will be to conduct an inspection of all "Fast-on-Connectors" for heat damage to the same connections for each inverter on both units.

There have been no previous occurrences.

8803280134 880317  
PDR ADOCK 05000457  
S DCD

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	///	Sequential Number	///	Revision Number				
Braidwood, Unit 2	0   5   0   0   0   4   5   7	8   8	-	0   0   8	-	0   0	0   2	OF	0   3	

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

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2 ; Event Date: February 20, 1988 ; Event Time: 0626  
 MODE: 3 - Hot Standby ; Rx Power: 0% ; RCS [AB] Temperature/Pressure: 557°F/2235 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 0626 on February 20, 1988, during the performance of BWSU RD-70, Control Rod Drive Mechanism Operational Test, there was a loss of power to Instrument Bus [EF] 212. This caused a Bus 212 Trouble Alarm [IB] in the control room. The loss of Instrument Bus 212 also caused the Reactor Trip Breakers [JG] to open due to the loss of control power to source range N-32 and intermediate range N-36 [IG]. Loss of control power to the source range also resulted in a Boron Dilution Protection System (BDPS) signal.

An equipment operator was dispatched to inverter 212 and found the inverter output voltage had degraded to 50 volts. Inverter 212 is the normal feed to Instrument Bus 212. The input AC and DC voltages were within their specified ranges. The inverter was shut down by the operator.

The equipment operator attempted to re-energize the bus from the Constant Voltage Transformer (CVT) [EA] but was unsuccessful as its output breaker tripped. The startup procedure for the CVT was repeated by the operator and the bus was energized. At 0652 on February 20, 1988, the plant was returned to a stable condition.

Operator actions neither increased nor decreased the severity of the event.

The appropriate NRC notification via the ENS phone system was made at 0712 on February 20, 1988, pursuant to 10CFR50.72(b)(2)(ii).

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 root cause of this event was a pre-service installation error by the vendor which resulted in a bad connection on a capacitor for the auto transformer in 2IP06E. The improper connection yielded excessive resistance which produced heat and caused it to burn off. This produced an imbalance in one phase of the transformer and a degraded output voltage condition.

The cause of the constant voltage transformer output breaker tripping is indeterminate as the symptoms would not repeat. Should this recur, then it will be addressed in a new report.

D. SAFETY ANALYSIS:

This event had no effect on the safety of the plant or public since the unit had not yet been taken critical and no radioactive effluent had been produced. All Engineered Safety Feature equipment functioned as designed. Under worst case conditions of the unit being at full power, the unit would have responded in the same manner as in this event. The CVT and emergency 125 VDC batteries used for instrument bus backup power supplies were available throughout the event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)										Page (3)		
		Year	///	Sequential Number	///	Revision Number								
Braidwood, Unit 2	0   5   0   0   0   4   5   7	8   8	-	0   0   8	-	0   0					0   3	OF	0   3	
TEXT      Energy Industry Identification System (EIIS) codes are identified in the text as [xx]														

E. CORRECTIVE ACTIONS:

The immediate corrective action was to restore the instrument bus to the CVT. The inverter was repaired by replacing the capacitor and connecting leads.

Action to prevent recurrence includes a full inspection of all fast-on connections and an inspection for heat damage to the same connections for each inverter on both units. This will be tracked to completion by Action Item 457-200-88-02401.

There are no corrective actions proposed for the output breaker of the CVT since the symptoms could not be repeated. Should this recur, then it will be investigated and a new report will be submitted.

F. PREVIOUS OCCURRENCES:

There have been no previous occurrences of inverter capacitor or lead failures regardless of cause.

G. COMPONENT FAILURE DATA:

<u>MANUFACTURER</u>	<u>NOMENCLATURE</u>	<u>MODEL NUMBER</u>	<u>MFG PART NUMBER</u>
General Electric	13ufd Trimming Capacitor	770836	23L6066



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

BW/88-044

March 21, 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 in accordance with the requirements of 10CFR50.73(a)(2) (iv) which requires a 30 day written report.

This report is number 88-008-00; Docket No. 50-457.

Very truly yours,

R. E. Querio  
Station Manager  
Braidwood Nuclear Station

REQ/PMB/jab  
(6815z)

Enclosure: Licensee Event Report No. 88-008-00

cc: NRC Region III Administrator  
T. Tongue, NRC Resident Inspector  
INPO Record Center  
CECo Distribution List

*Handwritten:* 1522  
11