LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
Braidwood, Unit 2	0 5 0 0 0 4 5 7	1 of 0 3

Title (4) Manual Reactor Trip Due to Inoperable Rod Control 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 Names	Docket Number(s)
									NONE	0 5 0 0 0
0 5	3 0	8 8	8 8	0 0 9	0 0	0 6	1 4	8 8		0 5 0 0 0

OPERATING MODE (9)	2	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)	X 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 in Abstract below and in Text)
		___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	
		___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
	AREA CODE
Christopher M. Wiegand, Nuclear Engineer, Ext. 2492	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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	V L	5 1 * *	W 1 2 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
___ Yes (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

At 0348 on May 30, 1988, while withdrawing Control Bank Rods, an urgent and non-urgent alarm occurred followed by the release of rods in Shutdown Banks C, D, E, and Group 2 Rods in Shutdown Bank A and Control Banks A and C. At 0406 the reactor was manually tripped. The root cause of this event was the failure of a miscellaneous Electric Room (MER) Ventilation Fan. This failure caused the temperature of the Rod Control power cabinets to increase to the Thermal Overload Protection setpoint. Actuation of the Thermal Overload Protection de-energized the power supplies which resulted in the rods being released.

Temporary cooling fans were installed in the MER until the ventilation fan repairs were completed. Procedural revisions are being processed to specify the personnel to be notified should the ventilation system become inoperable. This should allow appropriate actions to be taken in a timely manner to maintain MER Ambient Temperature within the limits of the power supplies. Additionally, an analysis and evaluation of the MER Ventilation System to verify its adequacy in cooling during the summer months will be performed. There have been no previous occurrences.

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A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2 ; Event Date: May 30, 1988 ; Event Time: 0406
MODE: 2 - Startup ; Rx Power: 0% ; RCS [AB] Temperature/Pressure: 558 Degrees F/2233 psig

B. DESCRIPTION OF EVENT:

The Miscellaneous Electric Room (MER) ventilation fan 2VE01C [VL] was inoperable at the beginning of this event and which contributed to the severity of the event.

At 0338 on May 30, 1988, mode change checklist 2BwGP 100-2T2, was completed. All shutdown banks were fully withdrawn, Boron Concentration was 884 ppm, and the estimated critical position was control bank D at 105 steps.

At 0343 rod control was placed in manual mode and control banks were withdrawn in overlap. At 0348 control bank A was fully withdrawn, control bank B was being withdrawn to 116 steps, and control bank C was being withdrawn to step 1. Although the unit was administratively in Mode 2, it was actually subcritical with a $K_{effective}$ of approximately 0.98.

At 0348, while withdrawing control bank rods, an urgent and non-urgent alarm occurred followed by the release of the rods in shutdown banks C, D, E, and the rods in Group 2 of Shutdown Bank A and the rods in group 2 of control banks A and C.

At 0406 the reactor was manually tripped due to the operational condition of the Rod Control System. All rods were fully inserted, and safe shutdown was accomplished.

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

The appropriate NRC notification via the ENS phone system was made at 0432 on May 30, 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 THE EVENT

The intermediate cause of the event was a trip of the Main and Auxiliary Rod Control Power Supplies [AA] of the affected power cabinets. The root cause of the event was the inoperability of the 2VE01C Ventilation Fan which resulted in high ambient temperatures in the MER, where the rod control power cabinets are located. The affected power supplies are rated for a maximum ambient temperature of 104 degrees (deg) F. The room temperature at the time of the event was approximately 100 deg F. It is estimated that inside the cabinet, and at the level of the power supplies, the temperature was as high as 110 deg F. The power supplies are equipped with thermal and electrical overload protection. Both of these circuits will trip when the temperature exceeds a preset value. The thermal circuit will reset by itself when the temperature drops to an acceptable level, and the electrical trip is reset by removing power to the supply.

When the electrical trips were reset and the temperature had cooled to below 95 deg F, the system was restored to normal.

D. SAFETY ANALYSIS:

There were no safety consequences as a result of this event. All equipment operated as designed. The manual trip was a conservative action. Under worst case conditions, operating at 100% power will all rods fully withdrawn, there would still have been no safety consequences as the reactor would have automatically tripped and safe shutdown would have been accomplished using plant procedures. Additionally, this event is described in section 15.4.3 of the Final Safety Analysis Report, "Rod Cluster Control Assembly Misoperation".

E. CORRECTIVE ACTIONS:

Immediate corrective actions were to repair ventilation fan 2VE01C and install temporary cooling fans in the MER.

Actions taken to prevent recurrence include revising Operating Rounds Procedures, BwOP 199-A53 and BwOP 199-A41, which monitor MER Temperature. The purpose of this change is to inform the Technical Staff Nuclear Group whenever the MER Temperature exceeds 95 deg F. This will allow appropriate actions to be taken in a timely manner to maintain MER ambient temperature within the design limits of the power supplies. These procedure revisions will be tracked to completion by action item numbers 457-200-88-08701, and 457-200-88-08702, respectively.

In addition, procedures BwAP 0-34-A3, and BwAR 0-31-A3, will be revised to include notifying the Technical Staff Heating Ventilation and Air Conditioning Group (HVAC) System Test Engineer whenever the 2VE01C fan becomes inoperable. These will be tracked to completion by item numbers 457-200-88-08703, and 457-200-88-08704, respectively.

Although the 2VE01C fan was responsible for the high ambient temperature in the MER that lead to this event, a similar event could happen even though the fan was operating properly. The MER is cooled by outside air, and therefore the room can be only as cool as the outside temperature. With the possibility of summertime temperatures reaching 95 deg or higher, the trip setpoint of the power supplies could again be reached. Therefore, an evaluation of the MER Ventilation System to verify its adequacy in cooling the MER during the summer months will be performed. This will be tracked to completion by item number 457-200-88-08705.

F. PREVIOUS OCCURRENCES:

There have been no previous occurrences of a reactor trip as the result of excessive ambient temperatures in the MER.

G. COMPONENT FAILURE DATA:

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG PART NUMBER
Westinghouse	Relay, Overload	None	AA33A

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

BW/88-628

June 23, 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 88-009-00; Docket No. 50-457.

Very truly yours,

R. E. Querio
Station Manager
Braidwood Nuclear Station

REQ/PMB/jab
(7126z)

Enclosure: Licensee Event Report No. 88-009-00

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

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