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10 CFR 50.73

November 21, 2007
BW070101

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


Braidwood Station, Unit 1
Facility Operating License No. NPF-72
NRC Docket No. STN 50-456

Subject: Licensee Event Report Number 2007-002-00 – Unit 1 Power Range N43 Positive Rate Trip Inoperable due to Miscalibration of Time Constant

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system," paragraph (a)(2)(i)(B) as a condition prohibited by the plant Technical Specifications. 10 CFR 50.73(a) requires an LER to be submitted within 60 days following discovery of the event, therefore, this report is being submitted by November 21, 2007.

There are no commitments contained in the attached report. Should you have any questions concerning this submittal, please contact Mr. David Gullott, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,



Thomas Coutu
Site Vice President
Braidwood Station

Enclosure: LER Number 2007-002-00

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE
Unit 1 Power Range N43 Positive Rate Trip Inoperable due to Miscalibration of Time Constant

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	22	2007	2007	002	00	11	21	2007	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)				
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)				
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)				
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)				
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)					
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER					
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A					

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Richard Gadbois, Maintenance Director	TELEPHONE NUMBER (Include Area Code) (815) 417-2500
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE MONTH: _____ DAY: _____ YEAR: _____
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On September 22, 2007, Braidwood Unit 1 was operating at full power. At 1346 hours, Technical Specification Limiting Condition for Operation Action Requirement 3.3.1, Conditions A, D and E were entered to perform an eighteen month channel calibration of nuclear instrumentation system power range channel N43. During the calibration, the as found value for the N43 rate circuit positive rate trip time constant was found with an out-of-tolerance value of 1.68 seconds. This value was below the Technical Specification requirement of greater than or equal to 2.0 seconds. Following proper notifications, the calibration surveillance was completed, with all as left values in tolerance, and N43 was returned to an operable status.

The past operability review determined that during the last 18-month calibration completed on March 8, 2006, the time constant value was inaccurately calculated.

The two root causes of the March 2006 calibration error were: 1) inattention to detail on the part of the instrument Maintenance technician; and 2) failure to perform a procedurally required independent verification of calculated data. The corrective actions to prevent recurrence include counseling the involved individual for failure to properly perform the surveillance calibration, and revising the power range surveillances to clearly indicate how the time constant is to be calculated, including requirements for independent verifications for the chart trace calculations.

There were no safety consequences impacting plant or public safety as a result of this event.

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

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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NARRATIVE

A. Plant Operating Conditions Before The Event:

Event Date: September 22, 2007 Event Time: 1346
 Unit: 1 MODE: 1 Reactor Power: 97 percent
 Unit 1 Reactor Coolant System (RCS) [AB] Temperature: 582 degrees F, Pressure: 2236 psig

B. Description of Event:

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

On September 22, 2007, Braidwood Unit 1 was operating at full power.

At 1346 hours, Technical Specification Limiting Condition for Operation (LCO) Action Requirement 3.3.1, Conditions A, D and E were entered to perform an eighteen month channel calibration of nuclear instrumentation system (NR) [IG] power range channel N43. During the calibration, the as found value for the N43 rate circuit positive rate trip time constant was found with an out-of-tolerance value of 1.68 seconds. This value was below the Technical Specification requirement of greater than or equal to 2.0 seconds and rendered N43 inoperable. Following proper notifications, the calibration surveillance was completed, with all as left values in tolerance, and N43 was returned to an operable status.

The past operability review determined that during the last eighteen month calibration completed on March 8, 2006, the time constant value was inaccurately calculated.

LCO 3.3.1 Function 3 requires all four of the power range neutron flux-high positive rate channels to be operable. Condition E applies to an inoperable power range neutron flux-high positive rate channel. A known inoperable channel must be placed in the tripped condition within six hours. Placing the channel in the tripped condition results in a partial trip condition requiring only one-out-of-three logic for actuation of the two-out-of-four trips. If the inoperable channel cannot be placed in the trip condition within the specified completion time, the unit must be placed in a Mode where these functions are not required operable. An additional six hours is allowed to place the unit in Mode 3.

This event is reportable under 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the Technical Specifications. The improper calibration rendered the one channel (i.e., N43) of the power range neutron flux high positive rate trip inoperable from the timeframe of March 8, 2006 to September 22, 2007, thereby exceeding the Technical Specification Completion Time for Condition E. The event requires a written report to the NRC (Licensee Event Response) within sixty days.

C. Cause of Event

The past operability review determined that during the previous eighteen month calibration of the N43 power range drawer, performed on March 8, 2006, the as found time constant value was recalibrated incorrectly. The two root causes of the March 2006 calibration error were 1) inattention to detail on the part of the Instrument Maintenance technician, and 2) failure to perform a procedurally required independent verification of calculated data.

The surveillance requirement uses a chart trace to calculate the time between the peak rate trip module output voltage and the decay of the voltage to 37 percent of the peak voltage. During the calibration, this decay time

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was inaccurately calculated. Specifically, the starting time that was used on the chart trace was the point at which the trip module output voltage began increasing, not the peak voltage. Due to this error, the calculated decay time was longer than the actual decay time.

An independent verification of the strip chart trace is required by the surveillance. This verification is to be performed independent of the activity by a qualified individual and is to be documented upon completion. From both a review of the chart traces from the March 2006 calibration and from interviews with a Instrument Maintenance technician who was involved with the calibration, it was determined that no independent verification was performed. The failure to perform this independent verification allowed the calculation error to remain undetected.

The time constants for the remaining three channels on Unit 1 and the four channels on Unit 2 were verified to be properly calibrated. Additionally, reviews of other Maintenance and Engineering procedures that utilize chart recorders for calculations were performed. There were no other instances identified where data from a chart recorder trace was used for calculations.

D. Safety Consequences:

There were no safety consequences impacting plant or public safety as a result of this event.

The power range neutron flux-high positive rate trip function ensures that protection is provided against rapid increases in neutron flux that are characteristic of a rod cluster control assembly (RCCA) drive rod housing rupture and the accompanying ejection of the RCCA. This function compliments the power range neutron flux-high and low setpoint trip functions for this channel, to ensure that the criteria are met for a rod ejection from the power range. The analyzed RCCA rod ejection accident assumes the reactor trip occurs from the power range neutron flux trip circuitry (high and low setpoint trip functions), and therefore does not credit the rate trip circuitry. These neutron flux setpoint trips remained functional during the entire operating cycle. Therefore, there was no loss of safety function. In addition, the positive rate protective trip is a 2 out of 4 power range trip so that even though this channel's high positive rate trip function would have tripped later than required by Technical Specifications, the remaining 3 channels were functional to provide required trip actuations within time requirements.

Additionally, the miscalibration of the rate circuit results in essentially no increase in core damage frequency or large early release frequency.

There was no safety system functional failure.

E. Corrective Actions:

Corrective actions include:

1. The channel N43 time constant was recalibrated and the time constants for the remaining three channels on Unit 1 and the four channels on Unit 2 were verified to be properly calibrated.
2. This event will be added to all nuclear instrumentation calibration models, to be used as operating experience in pre-job briefs.

Corrective actions to prevent recurrence include:

1. Counseling the involved individual for failure to properly perform the surveillance calibration, and
2. Revising the power range surveillances to clearly indicate how the time constant is to be calculated, including requirements for independent verifications for the chart trace calculations.

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F. Previous Occurrences:

There have been no similar Licensee Event Report events at Braidwood Station in the last three years.

G. Component Failure Data:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
N/A	N/A	N/A	N/A