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U. S. Nuclear Regulatory Commission
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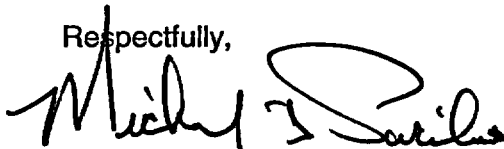
Braidwood Station, Unit 2
Facility Operating License No. NPF-77
NRC Docket No. STN 50-457

Subject: Submittal of Licensee Event Report Number 2003-001-00, "Inadequate Enforcement of the Maintenance Fundamentals Results in the Inoperability of the 2A Train of the Chemical and Volume Control System for Twelve Days"

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). 10 CFR 50.73(a) requires an LER to be submitted within 60 days after discovery of the event; therefore, this report is being submitted by September 19, 2003.

Should you have any questions concerning this submittal, please contact Kelly Root, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,



Michael J. Pacilio
Site Vice President
Braidwood Station

Enclosure: LER Number 2003-001-00

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

IE22

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. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bjl@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NOEB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME Braidwood, Unit 2	2. DOCKET NUMBER STN 05000457	3. PAGE 1 of 4
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4. TITLE
Inadequate Enforcement of the Maintenance Fundamentals Results in the Inoperability of the 2A Train of the Chemical and Volume Control System for Twelve Days

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEA	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	21	2003		2003-001-00		09	18	2003	N/A	N/A
									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)(ii)(B)	<input type="checkbox"/>	73.73(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"/>	73.73(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				
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>						

12. LICENSEE CONTACT FOR THIS LER

NAME Bill Stoffels, 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	MANUFACTURER	REPORTABLE TO eptx	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED

Yes (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
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16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 21, 2003 the limit switch lead for Motor Operated Valve (MOV) 2CV8111, (i.e., Chemical and Volume Control System charging pump mini-flow isolation valve) was discovered lifted and taped. The lead had not been relanded following MOV diagnostic testing at the completion of the test on July 9, 2003. Also, the post maintenance testing (PMT) for this work did not detect the problem before the valve was returned to service. This resulted in the 2A train Centrifugal Charging pump (CV) being declared inoperable for 12 days since the mini-flow isolation valve was incapable of auto closure, however, valve 2CV8111 was still available for manual repositioning.

The Root Cause for the event was the failure of Maintenance management to adequately enforce the required Maintenance Fundamentals (i.e., basic expected good work practices). They did not ensure that the personnel involved followed the standards, policies and administrative controls required to successfully perform the required work on the 2CV8111 valve. The corrective action is that Maintenance management will ensure that each worker knows the expectations for each job prior to starting the work, including performance of a pre-job brief, reviewing applicable operating experience (OPEX), reviewing critical steps and potential configuration control issues.

This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Braidwood, Unit 2	STN 05000457				2 of 4
		2003 - 001 - 00			

A. Plant Operating Conditions Before The Event:

Unit: 2 Event Date: July 21, 2003 Event Time: 1300

MODE: 1 Reactor Power: 100 percent

Reactor Coolant System (RCS) [AB] Temperature: 580 degrees F, Pressure: 2235 psig

B. Description of Event:

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

On July 8, 2003, electricians set up Motor Operated Valve (MOV) 2CV8111 (i.e., Chemical and Volume Control System (CV) [BQ] charging pump mini-flow isolation valve) to perform routine diagnostic testing on the valve.

To facilitate the diagnostic testing, a local dual control pushbutton switch was installed at the valve to allow the electricians performing the work to locally operate the valve. This is standard practice at Braidwood Station when performing MOV diagnostic testing. Installation of the local dual control pushbutton involves alteration of the MOV control circuit by installing the pushbutton in series with the open and close circuit wiring and the placement of jumpers in the motor control center (MCC). Additionally, for this MOV, a lead in a parallel closure circuit for auto-closure of the valve was lifted to prevent auto-closure while the valve was being tested. Configuration control of the valve control circuit wiring was to be maintained by using concurrent verification practices documented in the testing procedure. The setup work was completed on the afternoon shift.

The required control circuit changes to support the testing were supplied by the MOV Engineer as directed by plant procedures. Another engineer independently verified the accuracy of the control circuit changes. Four leads in the control circuit were lifted including a black-white wire in the auto-close control circuit. This lead was lifted to prevent auto closure of the valve during testing. The instructions provided to the electricians by the MOV Engineer specifically stated that lifting the black-white wire would disable the auto close function. The end of the wire was taped with black electrical tape. All lifted leads were concurrently verified as required by the testing procedure.

On the following shift (i.e., midnight shift) on July 9, 2003, two different electricians were assigned to support the diagnostic testing. Prior to starting the testing, the MOV Engineer gave a briefing of the work to be performed to the electricians. The engineer's briefing concentrated on the technical aspects of the work. The FLS was confident that the workers understood the work to be performed and he knew that they were experienced at this type of work. Thus, a formal pre-job brief was not considered necessary by the FLS.

The diagnostic testing was completed during the midnight shift. After removal of the test equipment, Electrician #1 performed the steps to re-land the leads from memory. After landing the leads, he told Electrician #2 that they had been landed. The electricians did not verify the specific leads landed using three-

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Braidwood, Unit 2	STN 05000457				3 of 4
		2003 - 001 - 00			

way communication. Three-way communications are required to be used when exchanging critical information. Also, place keeping of the procedure steps was not performed. As a result, the black-white lead was not re-landed. The lead went unnoticed as it appeared similar to the other internal wires and components (i.e., it was a black-white wire with black electrical tape on the end).

Concurrent verification was not performed as required. The performer and the concurrent verifier are required to independently locate the component and review the intended action using the controlling document. Neither worker did this. After Electrician #1 landed the leads, Electrician #2 inappropriately initialed and dated the steps performed in the concurrent verification column for all four leads.

After the three leads were landed, Operations performed the post maintenance testing (PMT) by stroking the valve. The PMT did not identify the fact that a lead was not landed as the valve stroked in response to the control switch demand as expected.

On July 21, 2003, Operations was performing a Unit 2B train safety injection (SI) surveillance test. Unexpected test results led to troubleshooting which eventually discovered the lifted lead for the 2CV8111 valve limit switch. At 1300, on July 21, 2003, 2A CV pump was declared inoperable. The lead was landed and the surveillance test was successfully performed. The troubleshooting team determined that the PMT for the valve diagnostic testing did not consider the auto-close portion of the circuitry. An appropriate PMT was performed to verify the operability of the 2CV8111 valve and the 2A CV pump was restored to operable status at 2236 on July 21, 2003.

C. Cause of Event

The root cause for this event was Maintenance management's failure to adequately enforce the Maintenance Fundamentals. Maintenance management did not exercise the proper control to ensure that the personnel involved with this event followed the standards, policies and administrative controls required for the work that was performed on 2CV8111. A contributing cause to this event was that the PMT only checked the normal open/close action of the valve and failed to check the auto actuation circuitry.

D. Safety Consequences:

The safety consequences of this event are minimal.

Valve 2CV8111 is a normally open valve which automatically closes following the switchover of the SI suction source from the refueling water storage tank (RWST) to the containment recirculation sump.

During normal plant operation, valve 2CV8111 is open to provide mini-flow protection for the 2A CV pump. Upon switchover to the recirculation mode of SI system operation, the charging pump mini-flow line is designed to automatically isolate. This is necessary because in the recirculation mode, the charging pumps take suction from the containment sump via the residual heat removal pumps. Isolating the mini-flow lines prevents inadvertently pumping the water from the containment sump to areas outside of the containment building.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Braidwood, Unit 2	STN 05000457				4 of 4
		2003 - 001 - 00			

During the period of time from July 9, 2003, when the lead was left un-landed, to July 21, 2003, when the lead was restored, the 2CV8111 was in the open position and unable to automatically close when conditions would have required it to close (i.e., low-low RWST level with a SI in progress). Although the 2A CV pump was inoperable it was available under normal operating conditions. Since 2CV8111 was in the open position, mini-flow protection was provided to the 2A CV pump.

In the case of a SI signal with low reactor coolant system (RCS) pressure, 2CV8111 would not auto close on a low-low RWST level due to the lifted lead. However, another automatic valve installed in series with the 2CV8111, would automatically close on low RCS pressure. The Emergency Operating Procedures check the status of the mini-flow line and ensure it is isolated as required. If the automatic valves fail to close and cannot be closed by the operators, direction is given to close the manually operated isolation valve in the line.

A 100 percent capacity redundant CV train was operable during the event.

This event did not result in a safety system functional failure.

E. Corrective Actions:

The corrective action to prevent recurrence (CAPR) is that Maintenance management personnel will ensure each worker knows the expectations for each job prior to starting the work. Those expectations include performance of a pre-job brief, review of Operating Experience (OPEX), review of lessons learned, review of key/critical steps, review of potential configuration control issues, the impact of the work on operations and the key fundamentals for the work package.

To address the inadequate PMT, the PMT requirements following MOV diagnostic testing were revised such that the parts of the circuit that were altered during testing that cannot be checked by a stroke test will be verified by circuit continuity checks.

F. Previous Occurrences:

May 19, 2001: LER 2001-001-00, "Braidwood Unit 2 Reactor Trip and Subsequent Loss of Non-Safety Related Offsite Power Due to Failure to Perform Concurrent Verification and Improper Command and Control." LER reported on July 17, 2001.

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