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July 3, 1989

Report Required by  
10 CFR Part 50, Section 50.73

US Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington DC 20555

MONTICELLO NUCLEAR GENERATING PLANT  
Docket No. 50-263 License No. DPR-22

Licensee Event Report 89-05  
Auto Isolation of HPCI Steam Line During  
Surveillance Test Due to Suspected Relay Malfunction

A revised Licensee Event Report for this occurrence is attached.

This event was reported via the Emergency Notification System per 10 CFR Part 72 on April 3, 1989.

*for* *Thomas M Parker*  
Thomas M Parker  
Manager  
Nuclear Support Services

c: Regional Administrator-III, NRC  
NRR Project Manager, NRC  
Resident Inspector, NRC  
MPCA  
Attn: J W Ferman

Attachment

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Monticello Nuclear Generating Plant										DOCKET NUMBER (2) 0 5 0 0 0 2 6 3				PAGE (3) 1 OF 4		
TITLE (4) Auto Isolation of HPCI Steam Line During Surveillance Test Due to Suspected Relay Malfunction																
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 4	0 3	8 9	8 9	0 0 5	0 1	0 7	0 3	8 9					0 5 0 0 0			
			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)													
OPERATING MODE (8) N			20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)	
POWER LEVEL (10) 0 7 7			20.406(a)(1)(i)				50.36(c)(1)				<input checked="" type="checkbox"/> 50.73(a)(2)(v)				73.71(c)	
			20.406(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
			20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(vii)(A)					
			20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)					
			20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)					
LICENSEE CONTACT FOR THIS LER (12)																
NAME Brian Linde, Senior Production Engineer										TELEPHONE NUMBER AREA CODE 6 1 2 2 9 5 - 1 0 9 8						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD						
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE: )												<input checked="" type="checkbox"/> NO				

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

During the performance of High Pressure Cooling Injection (HPCI) System Operability Test, the HPCI Steam Isolation Valves, MO-2034 and MO-2035, closed upon receiving a Primary Containment Group IV Isolation from an Engineering Safety Feature (ESF) actuation signal. The closure was the result of a HPCI steam line high flow signal. No other steam leak indications were noted, nor was there an increase in the stack release rate. A system walkdown was performed and no leaks were noted. Concurrence from plant management was obtained and HPCI was unisolated. Operability of redundant systems was demonstrated. The HPCI operability test was successfully run repeatedly after the event.

The root cause of this event was conjectured to be the improper actuation of the HPCI steam line high flow time delay relays. The relays were checked and verified to operate properly immediately after the event. A plant outage was previously scheduled, due to an unrelated maintenance activity, and as a precautionary measure the relays were replaced. HPCI was again successful run at both 150 psig and 1000 psig reactor pressure and was subsequently declared operable. HPCI system surveillances and calibrations will continue to be performed to verify system operability.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104  
EXPIRES 8/31/85

FACILITY NAME (1) Monticello Nuclear Generating Plant	DOCKET NUMBER (2) 05000263	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		89	005	01	02	OF 04

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

## DESCRIPTION

On April 3, 1989, with the plant in end-of-cycle coastdown operation at 76.8% power, the Reactor Core Isolation System (RCIC) System (BN) was conservatively declared inoperable pending evaluation by the plant technical staff due to a cooling water relief valve lifting and failing to reset. In accordance with Technical Specification surveillance requirements, the HPCI System (BJ) is required to be demonstrated to be operable immediately if RCIC is inoperable. The HPCI system was started at 0310 and a high steam flow signal was received, resulting in an ESF actuation. The Primary Containment Group IV HPCI Steam Isolation Valves, MO-2034 and MO-2035, automatically closed. At this time, no steam leaks were noted, nor was there an increase in the release rate. HPCI was declared inoperable, a shutdown was initiated. Further review of Technical Specifications and the surveillance test for RCIC confirmed the system could be considered operable. RCIC was declared operable and reactor power was returned to 76.8%.

The HPCI system piping was walked down and no leaks were noted. With concurrence of plant management, HPCI was unisolated. Until an investigation could be completed, HPCI was declared inoperable.

## CAUSE

The spurious isolation initiated by this event could not be duplicated during subsequent testing of the HPCI system. It was originally conjectured that the Agastat time delay relays for the high steam flow signal failed to function properly.

These Agastat time delay relays are associated with a high steam flow trip at a setpoint of 150,000 lb/hr sustained for 45 seconds. These time delay relays could have tripped in a shorter time than the specified 45 seconds, causing the isolation. Testing of the system shows that the start up transient will increase flow greater than 150,000 lb/hr, and settle out at less than this value. If the time delay relay failed to provide a time delay function, the system would isolate on high steam flow due to the 150,000 lb/hr setpoint during a normal start-up transient.

The replaced relays were bench tested and found to be within their calibration specification. Since this event could not be duplicated and the replaced relays tested satisfactory, the root cause for this event cannot be determined and was a spurious isolation of the HPCI steam line.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 5/31/85

FACILITY NAME (1) Monticello Nuclear Generating Plant	DOCKET NUMBER (2) 0 5 0 0 0 2 6 3	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

## ANALYSIS

The closing of the HPCI Steam Line Isolation Valves, MO-2034 and MO-2035, rendered HPCI inoperable. Division I Core Spray, Residual Heat Removal, Automatic Pressure Relief System, and Reactor Core Isolation Cooling were available to perform as required by Technical Specifications 3.5.D.2.

The event had no affect on the public health or safety and could not have had more severe consequences regardless of the initial conditions because of the availability of the redundant safety systems cited previously. Even though HPCI was declared inoperable, it was demonstrated to run without fault repeatedly during the five (5) days immediately following the event. There existed no long term operability problem and the system was returned to service when the analysis and investigations were completed.

Discovery of inoperability was immediate due to the closure of the HPCI Steam Line Isolation Valves. HPCI was isolated for only one (1) hour and ten (10) minutes before the isolated valves were again open. The system was declared inoperable for five (5) day and six (6) hours. Even though HPCI was declared inoperable, it had been demonstrated that the system would have been available and would have performed its safety function if auto initiation had occurred.

## CORRECTIVE ACTION

Surveillance testing was performed on the HPCI system between April 4, 1989 and April 7, 1989 a total of six (6) times. Conditions were simulated to match those that initiated the event. HPCI was run successfully during these tests. Start-up traces were recorded for steam flow, turbine speed, pump flow, pump discharge pressure, control valve position, stop valve position, and EGM output. These traces were reviewed by plant personnel and no abnormalities were noted. General Electric engineering personnel concurred that there were no abnormalities.

The Agastat time delay relays for the high steam flow circuit were checked and verified with surveillance/calibration procedures immediately after the event and monitored during each performance of the surveillance test during the investigation. These checks found no discrepancies with the calibration or operation of the relays. The plant was scheduled for an outage on April 8, 1989, due to an unrelated maintenance activity. Even though the Agastat relays had tested satisfactory immediately after the event, the relays were replaced as a precautionary measure.

Post-outage surveillance testing for HPCI was performed at both 150 psig and 1000 psig reactor pressure. All tests were successful and HPCI was declared operable at 0910 on April 9, 1989.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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		8 9	0 0 5	0 1	0 4	0 4

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

The replaced relays remained in an unexercised state for approximately fifty (50) days before being bench tested to verify calibration. The results of the testing found the relays to be within their calibration specification. This event is considered to be a spurious isolation of the HPCI steam line and the exact cause cannot be determined. The HPCI system surveillance tests are continuing to be performed on an accelerated schedule to monitor system operability.

ADDITIONAL INFORMATION

## 1. Failed Component Identification

None

## 2. Previous Similar Events

None