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Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362-9637

Operated by Nuclear Management Company LLC

December 21, 2001

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

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

LER 2001- 011
Worker Jarred Instrument Rack Causing Scram

A Licensee Event Report for this occurrence is attached. This report contains no new NRC commitments.

Contact Doug Neve, Interim Licensing Manager, at (763) 295-1353 if you require further information.

Jeffrey S. Forbes
Site Vice President
Monticello Nuclear Generating Plant

Enclosure
c: Regional Administrator - III NRC
NRR Project Manager, NRC
Sr. Resident Inspector, NRC
Minnesota Department of Commerce

IE22

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Rec'd 01/23/02

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)	Estimated burden per response to comply with this mandatory information collection request: 50 hours. 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 bjs1@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 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE
Worker Jarred Sensitive Instrument Rack Causing Scram

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
10	23	2001	2001	– 011 –	00	12	21	2001	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	N
10. POWER LEVEL	098

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)	X	50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Paul Hartmann, Sr. Licensing Analyst	763-271-5172

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
B	JB	DCC	Moore Products	Y					

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

While in coastdown for refueling, at 1712 on October 23, 2001, a human performance error caused a reactor scram. The scram was a result of inadvertent contact of a support brace attached to a sensitive instrument rack by an individual performing work in the area.

The primary cause of the event was determined to be inadequate work practices. Although the worker was aware of the sensitive nature of the instrumentation on the rack in the area in which he was working, the worker elected to transport heavy barrier stanchions through the narrow pathway immediately adjacent to a sensitive instrument rack. The worker lost his balance and bumped a support brace for the instrument rack.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

Description

On October 23, 2001, while operating in coastdown to refueling at 98% power, a reactor scram occurred at 1712. The reactor scram signal was initiated by a Main Steam[1] Isolation Valve[2] (MSIV) closure, resulting from a Primary Containment Isolation System (PCIS)[3] Group 1 Isolation signal.

In response to the scram and MSIV closure, a typical prompt reactor vessel level drop occurred due to the collapse of voids. When level reached +9 inches, Group 2 and 3 Containment Isolations occurred.

All safety systems required to respond to the scram functioned properly. The Safety Relief Valves[4] (SRV) cycled six times to control reactor pressure in the first 24 minutes following the scram.

The scram recovery was affected by the Feedwater[5] Regulating Valves[6] (FRV) locking in an open position and not responding to water level rising after the initial void collapses. The reactor feedwater pumps[7] tripped on high reactor level less than one minute after the scram occurred. By procedure, an operator would have been required to trip one feed pump as level returned to normal operating levels. Since both feed pumps tripped, the procedure required an operator to manually restart a reactor feed pump. This occurred at approximately 1737, corresponding to the end of the last SRV cycle.

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[1] EIIS System Code: SB
[2] EIIS Component Code: ISV
[3] EIIS System Code: JM
[4] EIIS Component Code: RV
[5] EIIS System Code: SJ
[6] EIIS Component Code: LCV
[7] EIIS Component Code: P

Cause

The cause of the event was personnel error. A non-licensed utility Radiation Protection Specialist (RPS) inadvertently contacted a structural support brace of sensitive instrument rack C-126 on the east side of the 935 foot elevation of the reactor building.

A Level 1 Condition Report and associated investigation were conducted. The review found that the RPS had determined a contaminated area existed that required posting behind instrument rack C-126. In accordance with Radiation Protection Procedures, the RPS proceeded to setup a contaminated area boundary in a narrow passage area behind the instrument panel.

Four stanchions were to be utilized to provide the placement of radiation barrier rope to define the contaminated boundary. These stanchions are odd-shaped and heavy, with a base approximately one foot square and a three-foot vertical pipe.

The RPS chose to move the four stanchions, aware of the nearby instrument panel's sensitivity to physical shock. While moving the fourth stanchion into place, the RPS lost his balance and made physical contact with a support for the instrument panel. The physical contact (bump) caused a PCIS Group 1 isolation and resultant reactor scram.

The RPS was qualified to perform the task and was under no time pressure to complete the task. He was fully aware of the sensitivity of the instrument to physical contact and moved the stanchions cautiously. A fitness for duty test was performed with negative results.

Two causal factors to the event were identified. The first was inadequate work practices. The work practice used by the RPS to transport the stanchions was inadequate. This was due to overconfidence by the RPS in his ability to move the barriers without affecting the critical instrumentation.

The second factor was a work environment susceptible to incidental contact. There was no physical barrier in the vicinity of the specific brace or any other support that would prevent activation of the equipment as the result of incidental contact. Posted warnings in the area were determined to be inadequate.

With respect to the FRV lock up, subsequent investigation identified a deficiency in the software for the Digital[8] Feedwater Control System[9] (DFCS) as the cause of the FRV lockup. The deficiency was corrected prior to restart.

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[8] EIIS Component Code: DCC
[9] EIIS System Code: JB

Event Analysis

Analysis of Reportability

The event is reportable under 10CFR 50.73(a)(2)(iv)(A), as an automatic activation of the Reactor Protection System and reactor scram, and as Group 1, 2 and 3 Containment Isolations.

The FRV lock up was determined not to be reportable.

The event does not constitute a safety system functional failure.

Safety Significance

The safety significance of the event is considered to be low, based on the operating crew successfully completing the abnormal operating procedure for a reactor scram, including manual run back of the recirculation pumps and restarting a reactor feed pump. Therefore, the health and safety of the public was not affected by the event.

A risk assessment performed by the Monticello Probabilistic Risk Assessment (PRA) Group concluded that this event is of low safety significance. This conclusion was based on the following considerations:

1. The Monticello PRA model includes an initiating event for MSIV closure. The event that initiated this unplanned shutdown (bumping an instrument that caused a Group I isolation, MSIV closure, and reactor scram) would be grouped into the MSIV closure initiating event. Recent operating history, including this event, is well within the bounds of the initiating event frequency used in the PRA model.
2. A review of the event also reveals that there were no equipment failures that resulted in the unavailability of systems modeled in the Monticello PRA. The feedwater pumps tripped, and one was restarted, just as is assumed in the PRA model for MSIV closure events. Therefore the event had negligible risk impact with regard to equipment reliability.
3. A quantitative assessment of the event was performed to confirm that the event had little impact on safety. This assessment was performed by calculating the probability of core damage, given that the event occurred. The result of this assessment is that the event was found to be of low safety significance.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

Corrective Actions

Cause 1: Inadequate work practices. The worker was counseled by Site management, including the Site Vice President, regarding the need to perform work activities in a deliberate controlled manner with due consideration of the risk of actions taken.

Cause 2: Work Environment. An action was assigned to provide a physical barrier and signs requiring Shift Supervisor authorization to enter the work area behind the C-126 instrument rack. The C-126 instrument rack is unique in that normal access behind the rack is necessary for routine work activities.

Failed Component Identification

Advanced Process Automation and Control System (APACS), manufactured by Moore Products Company for the DFCS.

Previous Similar Events

None within approximately ten years.

Past Corrective Action Analysis

A reactor scram related to physical agitation of equipment has not occurred in over ten years. Corrective actions resulting from four scrams from 1987 to 1990 were effective for a significant time period. The circumstances of this event were different from the previous scrams in that the worker was aware of the sensitivity of the critical instruments, and was utilizing what he considered appropriate care for the work being performed.

The work environment issue for this specific instrument panel has not been addressed to the extent it will be now. Although the area had warning signs for sensitivity, the signage will be improved, and the area will have more restrictive controls for the performance of work.

An action will be pursued to evaluate the effectiveness of previous actions to prevent instrument perturbations.