May 09, 2003

L-MT-03-029
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

LER 2003-001
Degraded Fire Barrier Penetration Discovered during a Walkdown

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

Contact Ron Baumer at (763) 295-1357 if you require further information.

David L. Wilson
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

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Monticello Nuclear Generating Plant	05000263	1 of 5

4. TITLE

Degraded Fire Barrier Penetration Discovered during a Walkdown

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
03	13	2003	2003	– 001	– 00	05	11	2003	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	N
10. POWER LEVEL	100

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

	20.2201(b)		20.2203(a)(3)(ii)	X	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)		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)
Ron Baumer	763-295-1357

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

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)

On March 13, 2003 during a walkdown of fire barrier penetration FZ-4900 in the upper 4KV room it was discovered that a portion of a penetration seal was degraded allowing the upper and lower 4KV rooms to communicate with each other. The barrier was declared inoperable and a continuous fire watch was established. In accordance with 10 CFR 50.72(b)(3)(ii), an 8-hour event notification was made. The Updated Fire Hazards Analysis was reviewed to identify other locations where gypsum board assemblies are used as penetrations. No other penetrations were found to be inoperable as a result of this walk-down. On March 15, 2003 the barrier was repaired and declared operable.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Monticello Nuclear Generating Plant	05000263	2003	– 001	– 00	2 of 5

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

Description

On March 13, 2003 during a walkdown of fire barrier penetration[1] FZ-4900 in the upper 4KV[2] room it was discovered that a portion of a penetration seal was degraded allowing the upper and lower 4KV rooms to communicate with each other. The barrier was declared inoperable and a continuous fire watch was established.

The penetration seal (FZ-4900) is a gypsum wallboard[3] assembly approximately 18" wide, 4' high and 24' long. The breach was located behind an electrical bus duct and was small in size, approximately ½" X 4". The space between the duct and wall was ~3" wide. The space was almost completely covered by a piece of angle iron attached to the concrete wall, however a small gap (approximately ½" wide) remained running the length of the duct. Joint compound had been used to seal the gap and was then painted over. Approximately 3½" below this angle iron was another piece of angle iron, also attached to the concrete wall that had the same gap and sealant configuration. In both cases the angle iron pieces were used as anchor supports for the metal studs used for gypsum wallboard structural support.

The entire assembly was installed under modification 80M013 and was constructed consistent with UL design U-303, giving the penetration a 2-hour fire rating. However, the barrier behind the bus duct was not installed consistent with this design, and may have been a contributing factor in propagation of the breach.

The barrier was repaired and declared operable on 3/15/03, and the continuous fire watch was secured.

The Updated Fire Hazards Analysis was reviewed to identify other locations where gypsum board assemblies are used as penetrations. Station personnel completed a walkdown of all other gypsum board assemblies to identify potential degraded conditions. Some surface cracks were found on the painted surfaces of inspected penetrations. The cracks will be cosmetically repaired. Surface cracks, which require cosmetic repairs, do not affect the integrity of the penetrations themselves. Thus, barrier operability is unaffected. No other penetrations were found to be inoperable during the walkdown.

Event Analysis

The Upper and Lower 4KV areas are required to be separated in accordance with 10CFR 50 Appendix R requirements.

Analysis of Reportability

In accordance with 10 CFR 50.72 (b)(3)(ii)(B), "Degraded or Unanalyzed Condition," an 8-hour event notification was made to the USNRC, as the degraded fire barrier was considered as "any event or

[1] Penetration – EIIS Component Code - PEN
[2] 4KV – EIIS System Code - EA
[3] Wallboard – EIIS Component Code - BD

condition that results in the nuclear power plant being in a unanalyzed condition that seriously degrades plant safety." Per 10 CFR 50.73 (a)(2)(ii)(B), a Licensee Event report is required for this event.

There was no safety system functional failure involved in this event.

Safety Significance

The PRA Group has concluded that although the condition of operating with a flaw in the fire barrier is undesirable, the additional risk that can be attributed to this condition at Monticello would not result in a significant impact on core damage frequency.

- The area of the flaw that allowed the lower 4KV room to communicate with the upper 4KV room was small (a few square inches).
- There are no significant combustibles in the lower 4KV room directly below the flaw in the fire barrier.
- There are no significant combustibles in the upper 4KV room directly above the flaw in the fire barrier.
- The flaw in the fire barrier is located on the opposite side of a large metal bus duct (supply from 1R and 2R transformers) from essentially all combustibles and equipment within the upper 4KV room.
- Both the upper and the lower 4KV rooms are equipped with smoke detectors that would provide early detection of a fire in either room. The smoke detectors provide alarms directly to the main control room.

Should a fire have occurred in either of these fire zones, it would have been detected in its early stages by the ceiling level fire detectors, which would have initiated a prompt response by the plant fire brigade. Propagation of a fire between these two fire areas is considered unlikely due to negligible combustibles within close proximity to the inoperable portion of the penetration. The fire loading in each of the zones is evaluated as 20 minutes (Upper 4KV – Area XII, Zone 14A) and 25 minutes (Lower 4KV – Area IX, Zone 12A). The small breach size would have passed only a limited amount of smoke and hot gases between fire areas. Damage due to smoke and hot gases was unlikely because of the limited time of exposure due to a prompt fire brigade response. Based on this assessment, safe shutdown would have been assured.

Cause

Penetration FZ-4900 was inspected during the 2001 refueling outage as part of the routine surveillance that is performed each cycle. The penetration was not identified as being degraded or containing any flaws other than surface cracks, which were cosmetically repaired shortly after the 2001 outage. Therefore, the breach developed since the previous inspection.

Review of penetration designs, interviews with Maintenance personnel, Operations personnel, and previous Fire Protection System Engineers were conducted in order to help narrow down a probable cause of the breach.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Monticello Nuclear Generating Plant	05000263	2003	– 001	– 00	4 of 5

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

Several possible causes including improper construction were considered during the investigation of the ½" x 4" breach.

1. Turbine Building vibration, which over time may have shaken loose the joint compound material, exposing the hole.
2. It may be possible that incidental maintenance work around the duct could have loosened the sealant and created the hole. For example, bus duct inspections may have resulted in movement of the back of the duct creating the hole.
3. This penetration was modified in the early 1980s, making it approximately 20 years old indicating possible age-related degradation. This failure mode was considered, but determined to be unlikely due to previous penetration inspections.

The most likely cause of the breach developing was due to the improper construction of the penetration along with some contribution of items 1, 2, and 3 above. The actual cause of the breach developing in penetration FZ-4900 is indeterminate.

Corrective Action

The station performed repairs to penetration FZ-4900 under Work Order 0307578, which restored operability.

Investigation of the extent of condition with respect to the installation non-conformances continues to be evaluated under our corrective action program.

Failed Component Identification

There was no failed component for this event.

Previous Similar Event

No previous events were found similar to the event in LER 2003-001. However, a review of previous station events found the following events related to degraded fire barriers:

LER 263-50/87011, "Fire Barrier Penetration Found Inoperable due to Inadequate Procedure"

LER 263-50/88004, "Fire Barrier Found Inoperable in Turbine Building due to Inadequate Procedures"

LER 263-50/89001, "Discovery of Fire Barrier Penetration Inoperable due to Error in Identification of Required Fire Barriers"

LER 263-50/89013, "Fire Barrier Penetration Inoperability as a Result of Failure to Adequately Assess Original Seal Configuration"

LER 263-50/90009, "Inoperable Fire Barrier Penetration Seal due to Non-compliance with Approved Plant Procedures"

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Monticello Nuclear Generating Plant	05000263	2003	– 001	– 00	5 of 5

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

LER 263-50/91021, "Inoperable Fire Penetration due to Pipe Movement Resulting from Possible Water Hammer"

LER 263-50/94007, "Surveillances Failed to Identify an Unsealed Fire Barrier"