November 1, 2004

L-MT-04-059
10 CFR Part 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 2004-002, "Cable Separation Issue Identified During Appendix R Re-analysis"

A Licensee Event Report for this occurrence is attached.

This letter makes no new commitments or changes any existing commitments.

John T. Conway for TJP

Thomas J. Palmisano
Site Vice President, Monticello Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC

NRC FORM 366 (6-2004)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104	EXPIRES 6-30-2007

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.

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TITLE (4) Cable Separation Issue Discovered During Appendix R Re-analysis

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
09	01	2004	2004	– 002	– 00	11	01	2004	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N
POWER LEVEL (10)	100

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

	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)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Ron Baumer	763-295-1357

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

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

ABSTRACT

While operating at 100% power on September 1, 2004, during a reconstitution review of the Monticello 10 CFR 50, Appendix R Safe Shutdown Analysis (SSDA) program, personnel discovered a non-conformance with 10 CFR 50, Appendix R, III.G.2 divisional separation criteria. Personnel determined the 4KV motor power cables for the Division I Residual Heat Removal (RHR) and Core Spray (CS) pumps pass through a Division II area without an adequate barrier. The Division I cables are physically located in a cable pull junction box (J113) in the Reactor Core Isolation Cooling (RCIC) room, which is designated as a Division II Fire Zone per the SSDA. As a result, an hourly fire watch was established in the RCIC Room, and an NRC notification was made in accordance with 10CFR50.72(b)(3)(ii)(B).

The root cause of this failure to provide required cable separation was a failure by personnel to recognize the 10 CFR 50, Appendix R non-compliance during the original Safe Shutdown Analysis. Due to the age of the non-conformance (1983) and the unavailability of personnel involved in the original SSDA development to interview, the station was unable to obtain any additional factual insights regarding the cause of the non-conformance. NMC has initiated a modification to restore compliance with 10 CFR 50, Appendix R, Section III.G.2. This modification will provide a 3-hour fire rated barrier for the Division I RHR and CS cables located within pull box J113.

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

Description

While operating at 100% power on September 1, 2004, during a reconstitution review of the Monticello's 10 CFR 50, Appendix R Safe Shutdown Analysis (SSDA) Program, personnel discovered a non-conformance with the requirements of 10CFR50, Appendix R, III.G.2 divisional separation criteria. Personnel determined that the 4KV[1] motor power cables[2] for the Division I Residual Heat Removal[3] (RHR) and Core Spray[4] (CS) pumps pass through a Division II area without an adequate barrier. The Division I cables are physically located within the Reactor Core Isolation Cooling[5] (RCIC) room in a cable pull junction box[6] in Fire Zone 1C. Per the SSDA, a fire in this area could also affect the corresponding Division II components. The actual installed configuration was verified under a station Work Order at 12:45 PM on September 1, 2004. The original Monticello SSDA had not identified this cable separation issue. Fire Zones (FZ) 1C and 2A comprise Fire Area III, which is designated as a Division II area per the SSDA. An hourly fire watch was established in FZ-1C (RCIC Room), and an NRC notification was made.

There was no equipment failure(s) associated with the separation issue.

Event Analysis

This issue constitutes a non-conformance with 10CFR50, Appendix R, III.G.2 divisional separation criteria requirements.

In accordance with 10 CFR 50.72 (b)(3)(ii)(B), "Event or Condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety," an 8-hour event notification was made to the USNRC. Per 10 CFR 50.73 (a)(2)(ii)(B), a Licensee Event report is required for this event.

The event is not classified as a safety system functional failure.

Safety Significance

Evaluation of this condition using PRA methods identified that a very low safety significance could be assigned to this discovery and that no noticeable increase in Core Damage Frequency (CDF) would occur due to these cables being non-embedded for a short run within the cable pull box in the RCIC Room.

If a postulated 10CFR50, Appendix R fire fully involves Fire Area III, a loss of both divisions of credited Core Spray and both divisions of credited RHR pumps (P-202A & B) could occur. The Monticello SSDA credits the protection provided by one division of Core Spray for reactor coolant inventory control

[1] EIIS System Code - EA
[2] EIIS Component Code – CBL5
[3] EIIS System Code - BO
[4] EIIS System Code - BM
[5] EIIS System Code - BN
[6] EIIS Component Code - JBX

to restore and maintain reactor water level above the top of active fuel following emergency depressurization. No other method of reactor coolant inventory control is analyzed by the SSDA to remain available for post-fire safe shutdown. The SSDA also credits the protection provided by one division of RHR in the suppression pool cooling mode in order to ensure that the suppression pool temperatures are maintained below the allowable limits. The RHR system ensures primary containment integrity by limiting containment pressurization and by limiting thermal stresses on the piping in the suppression pool. No other method of suppression pool cooling is analyzes in the SSDA to remain available for post-fire safe shutdown.

Based on a review of cable design information and a walkdown of these fire zones, several reliable mitigation systems continue to remain available to prevent core damage (manual operation of RHR/RHR Service Water (RHRSW)[7], depressurization with Safety Relief Valves (SRV)[8], containment venting[9], and alternate injection using the fire protection system[10] or RHRSW). Although cables for one non-credited Division I RHR pump (P-202C) are located within the affected fire area, power remains available to one RHR pump (P-202D) and both RHRSW pumps. The systems can be manually aligned so that RHR provides injection and heat removal, with RHRSW providing the ultimate heat sink function. Depressurization is required for RHR to inject to the Reactor Pressure Vessel (RPV), and this function remains available through operation of SRVs. Containment venting remains available, which allows containment integrity to be maintained, should RHRSW fail. Coupled with RPV depressurization and containment venting, RHRSW and fire protection system also serve as backup injection systems that represent long term success paths. Therefore, the risk associated with this issue is low (contributes <1E-6 per year to CDF).

In addition to the above, the safety significance is further mitigated due to the following reasons. The Division I RHR cable and CS cable are located in FZ-1C at Reactor Building elevation 896' and the Division II safe shutdown cables are located in FZ-2A at elevation 935'. The vertical separation between the divisional cables is more than 30 feet, since the Division II cables are located in the overhead trays near the ceiling on elevation 935'. A path between the two elevations exists through multiple metal grated landings and stairways, with one opening in the 935' elevation floor for the staircase. The equivalent fire severity durations in FZ-1C and FZ-2A are calculated to be 7 minutes and 47 minutes respectively. Since the RHR and CS Division I cables are located at the ground level within a metal enclosure (pull box), with minimal fire severity duration (7 minutes), it is reasonable to assume that a fire would not propagate from elevation 896' to the Division II cables in the overhead of 935' elevation. It is also reasonable to assume that a fire would not propagate down from elevation 935' to damage the Division I cables located within the metal pull box. Fire detection in Fire Area III is annunciated in the Control Room. If a fire existed in either fire zone 1C or 2A, the Control Room would have prompt notification and the fire brigade would be dispatched.

Monticello's Individual Plant Evaluation of External Events (IPEEE) estimates the frequency of combined fire initiation in the two fire zones to be 8E-3 per year. A review of industry fire events that

[7] EIIS System Code - CC
[8] EIIS Component Code – RV
[9] EIIS System Code - JM
[10] EIIS System Code - KP

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have occurred over the last 10 years indicates that <4% of fires have propagated beyond the piece of equipment where they started. Based on this historical data, it is estimated that 10% of transient fires and 2% of hot work fires affect an accident mitigation component. Of the fires that have propagated beyond a single piece of equipment, none have propagated to the point where the entire fire zone became fully involved. Therefore, a fire involving FZ-1C would not necessarily propagate to FZ-2A or vice versa. Based on the information above, the frequency of fire occurring in one of these zones and affecting more than one accident mitigating component is estimated to be 8.1E-5 per year. Furthermore, the frequency of fire occurring in one of these zones and propagating to fully involve both zones is estimated to be 2.4E-6 per year. Accordingly, the safety significance is low for this non-conforming condition.

Cause

The root cause of the cable separation issue was a failure by personnel to recognize a 10 CFR 50, Appendix R compliance issue with the cable (field) routing in the original Safe Shutdown Analysis report. Due to the age of the non-conformance (1983) and the unavailability of personnel involved in the original SSDA development to interview, the station was unable to obtain any additional factual insights regarding the cause of the non-conformance.

Corrective Action

A station fire watch has been established as a compensatory measure until the permanent corrective action (modification) has been installed and successfully tested.

NMC has initiated a modification to restore compliance with 10 CFR 50, Appendix R, Section III.G.2. This modification will provide a 3-hour fire rated barrier for the Division I RHR and CS cables located within pull box J113. NMC expects completion of the modification in the 3rd quarter of 2005.

The reconstitution review of the Monticello 10 CFR 50, Appendix R Safe Shutdown Analysis (SSDA) Program is designed to validate the original SSDA. Any 10 CFR 50 Appendix R non-conforming conditions arising from the reconstitution review, such as the issue being reported in this LER, will be corrected. NMC considers this effort to be effective, and therefore, no additional actions beyond continuation of this reconstitution project are required.

Failed Component Identification

N/A

Previous Similar Events

In June 2002 the NRC identified a failure to protect redundant trains of equipment and cabling in the intake structure pump room. Specifically, the Emergency Service Water (ESW) system pumps were not provided the separation required by 10 CFR 50, Appendix R, Section III.G.2. The corrective actions for this issue include modifications and a request for Exemption from the requirements of 10 CFR 50,

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Appendix R. The corrective actions from this issue formed the basis for the SSDA reconstitution effort, which lead to the discovery of the current issue.

Station Corrective Action Program (CAP) item CAP033003, “Division I and II Control Room Heating Ventilation Air Conditioning cables are routed through a fire area approximately 25 feet apart”, was identified on April 8, 2004. This CAP item was identified by the on-going reconstitution review. NMC determined there was sufficient separation and no intervening combustibles in the area. Corrective actions included posting of the area for prevention of transient combustible storage, and initiation of a plant modification to correct the issue.

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