



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

Operated by Nuclear Management
Company LLC

April 13, 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 2001-003

**Inadequate Procedures Result in Failure to Recognize
Entry Into 36-Hour Limiting Condition for Operation Required
When Standby Gas Treatment System Doors Opened for Access**

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

Contact David Musolf, Consulting Production Engineer, at (763) 295-1201 if you require further information.

Byron Day
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III NRC
NRR Project Manager, NRC

Sr Resident Inspector, NRC
Minnesota Department of Commerce

Attachment

IE22

NRC FORM 366 (1-2001)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001																																																																		
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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NAME David Musolf		TELEPHONE NUMBER (Include Area Code) (763) 295-1201																																																																		
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)																																																																				
<p>On February 20, 2001, during normal full power operation, it was discovered that maintenance practices used for on-line maintenance of a Standby Gas Treatment System (SBGT) filter train may degrade the performance of the redundant train. In the past, during on-line maintenance, an individual SBGT train was declared inoperable and isolated, a seven-day Limiting Condition for Operation was entered, and the system doors were opened to access components in the filter train. During an engineering review of this practice, it was determined that when any filter unit door is opened and control panels were deenergized, flow pathways are created through the open door and into the standby train. These flow paths, while small, were not analyzed for adverse effects on the performance of the standby train. It was determined that procedures needed to be revised to prevent both trains from being affected by maintenance activities on one train, or if this is not possible, to observe a Limiting Condition for Operation which is appropriate for inoperability of both SBGT trains.</p>																																																																				

(6-1998)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME(1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
MONTICELLO NUCLEAR GENERATING PLANT	05000263	2001	-- 003 - -	00	2 of 4

Description

During past Standby Gas Treatment System¹ (SBGT) on-line maintenance activities, the following sequence of events has normally been followed when working on one train of the SBGT system:

1. A seven-day Technical Specification Limiting Condition for Operation (LCO) entered
2. The train was declared inoperable
3. The train was isolated and associated control panels were deenergized.
4. The system filter² train doors were opened to access components in the filter train.

On February 20, 2001, during normal full power operation, engineering review of this SBGT on-line maintenance procedure determined that it was non-conservative in that it did not consider the potential adverse impact on the redundant train when the filter train doors were opened on the train undergoing maintenance at the same time that the associated control panels were deenergized.

When any filter unit door is opened, a flow pathway is created from the open door, through the downstream components in the filter unit, through the outlet isolation damper (which fails open when the train is electrically isolated), through the cross-connect duct and restricting orifice³, and into the operable SBGT exhaust fan. The flow rate through this pathway would be larger than the design idle train flow rate resulting in degraded performance of the operable SBGT train if it were required to function following an accident.

In addition to the flow path described above, there would also be a second pathway created into the open filter train door, backwards through the upstream components and the inlet isolation damper (which fails open when the train is electrically isolated), and into the operable SBGT train.

A third concern arises if any internal filter train components are removed during maintenance and the train is electrically isolated. Flow resistance is lower when filter components are removed and the train isolation dampers fail open on loss of power. This lower flow resistance would also allow more flow through the idle train into the operable train and provide an unfiltered bypass of the operable train, thereby degrading system performance.

The first two pathways can result in excessive air being drawn from the SBGT room into the operating train. This could allow unfiltered post-accident secondary containment air to enter the SBGT room and released from the plant stack without filtration.

¹ EIS System Code: VA

² EIS Component Code: FLT

³ EIS Component Code: OR

(6-1998)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME(1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
MONTICELLO NUCLEAR GENERATING PLANT	05000263	2001	-- 003 -	00	3 of 4
			-		

Since the potential existed for the operable SBGT train to be degraded during on-line maintenance of the other train, a 36-hour LCO period should have been conservatively entered. A 36-hour LCO is appropriate for inoperability of both SBGT trains.

Event Analysis

Analysis of Reportability

This event was determined to be reportable in accordance with 10 CFR Part 50, Section 50.73(a)(2)(vii) since it had the potential to cause the inoperability of two independent trains of a single system designed to mitigate the consequences of an accident. Reporting in accordance with 10 CFR Section 50.73(a)(2)(v)(C) is also applicable.

Safety Significance

Following engineering evaluation, the safety significance of this event was determined to be small for the following reasons:

1. A review of work orders for the last five years of plant operation found that there were 12 periods within the last five years when SBGT on-line maintenance was performed. The maximum duration of maintenance during these periods was 6 hours and 35 minutes. It is estimated that a filter train door was open for 50% or less of each period during which both trains of SBGT could be affected. There were no occasions when maintenance exceeded 36 hours.
2. An open filter train door downstream of the second high efficiency particulate filter is expected to create the largest potential bypass flow into the redundant operating SBGT train. An extremely conservative analysis has been performed assuming this bypass flow consists of 540 cfm of secondary containment post-accident atmosphere. Under these conditions offsite doses would remain less than 10% of 10 CFR Part 100 guidelines and dose to control room operators would remain less than 60% of the 10 CFR 50, Appendix A, General Design Criterion 19 guideline.
3. The impact on an operating SBGT train caused by removing a filter train element during maintenance on the other train would not significantly degrade the capability of the operable train to maintain a negative pressure in secondary containment. The dose consequences of the removal of a charcoal adsorber element would be bounded by the condition described above of operation with an open filter train door.

(6-1998)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME(1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
MONTICELLO NUCLEAR GENERATING PLANT	05000263	2001	-- 003 -	00	4 of 4
			-		

Cause

The root cause of this event was determined to be inadequate procedures caused by the failure of plant engineering and operations personnel to recognize the potential for adverse interaction between the SBGT trains during maintenance.

Corrective Actions

SBGT hold and secure card isolations have been revised to require tagging the SBGT doors in the closed position when control power to an SBGT train is deenergized thereby causing the train isolation damper to fail open. Operation control documents associated with SBGT maintenance and testing have been placed on hold and will be revised prior to their next use to require tagging SBGT access doors closed when train control power is deenergized for maintenance.

Work control directives will be reviewed for possible enhancements to emphasize evaluating conditions during maintenance activities that could have adverse effects on redundant systems.

Engineering will evaluate the possibility of using mechanical closure stops on the SBGT train isolation dampers to hold them closed during train maintenance.

Engineering, operations, and technical staff personnel will receive training on this event with emphasis on prevention of similar maintenance interactions in other systems.

Failed Component Identification

Not applicable.

Similar Events

This failure of plant engineering and operations personnel to recognize the potential for adverse interaction between the SBGT trains during maintenance is similar to the discovery of SBGT train isolation activities which affected the operability of secondary containment isolation dampers. This event was previously reported as LER 2000-006.