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

Operated by Nuclear Management Company LLC

January 7, 2002

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

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

LER 2001-012
Refueling Testing Identifies Containment Isolation Valve Leakage Greater than Allowed by the Technical Specifications

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

Contact Thomas Parker, at (763) 295-1014 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

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

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE
Refueling Testing Identifies Containment Isolation Valve Leakage Greater than Allowed by the Technical Specifications

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
11	08	2001	2001	– 012 –		01	07	2002	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE: N

10. POWER LEVEL: 0

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)		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)	X	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)
Tom Parker	763-295-1014

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	SB	ISV	A391	Y	B	CE	ISV	A391	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)

Local leak rate testing during a refueling outage indicated that the following limits established in the Technical Specifications for Containment Isolation Valve leakage were exceeded: 1) the main steam isolation valve leakage limit and 2) the combined maximum flow path leakage rate for all containment penetrations and valves subject to Type B and C tests. Five valves with excessive leakage were identified, inspected and repaired as necessary. The valves were retested satisfactorily. The total minimum flow path leakage was not exceeded, therefore, this event did not affect the health and safety of the public.

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

Description

During the November 2001 refueling outage, local leak rate testing indicated that limits established in the Technical Specification for Containment Isolation Valve Leakage were exceeded.

Technical Specification 3.7.A.2.b.3 limits main steam isolation valve leakage to "Less than or equal to 46 scf per hour combined maximum flow path leakage for all main steam isolation valves when tested at 25 psig." The leakage associated with main steam isolation valve AO-2-86 C and D[1] caused this limit to be exceeded. See table below for more details.

Technical Specification 3.7.A.2.b.2 states: "A combined maximum flow path leakage rate of less than or equal to 0.6La for all penetrations and valves, subject to Type B and C tests when pressurized to Pa, 42 psig." "La" is the maximum allowable leakage rate in percent by weight of the containment air volume per day at Pa. "Pa" is the calculated peak containment pressure related to the design bases accident. The leakage associated with three containment isolation valves, MO-2397, MO-2398[2] (Reactor Water Cleanup System) and CV-2790[3] (Recirculation System)caused this limit to be exceeded. See table below for more details.

The combined maximum flow path leakage is the total containment maximum pathway leakage that would exist if the valve with the lowest leakage in each penetration failed to close.

Valves with Technical Specification Excessive Leakage			
Test Date	Valve Name	Valve Description	"As Found" Leakage Rate[4]
11/8/01	**AO-2-86C Outboard Main Steam Isolation Valve on the "C" Main Steam Line**	18" Venturi, Spring Actuated double disc gate Valve (Installed in 1994)	33 scfh @ 25 psig
11/8/01	**AO-2-86D Outboard Main Steam Isolation Valve on the "D" Main Steam Line**	18" Venturi, Spring Actuated double disc gate Valve (Installed in 1994)	27 scfh @ 25 psig
11/11/01	**MO-2397 Reactor Water Cleanup Inlet Inboard Isolation Valve**	Motor Operated 4" 600# Double Disc Gate Valve (Installed in 2000).	95 scfh @ 42 psig
11/11/01	**MO-2398 Reactor Water Cleanup Inlet Outboard Isolation Valve**	Motor Operated 4" 600# Double Disc Gate Valve (Installed in 2000).	839 scfh @ 42 psig

1 EIIS System code = SB, EIIS Component Code = ISV
2 EIIS System code = CE
3 EIIS System code = AD

4 Standard Cubic Feet Per Hour = scfh or scf per hour

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

11/10/01	**CV-2790 RECIRC Sample Line Inboard Isolation Valve**	Air Operated 3/4" - Double Disc Gate Valve (Installed in 1991).	138 scfh @ 42 psig

Event Analysis

Analysis of Reportability

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B): "Any operation or condition prohibited by the plant's Technical Specifications . . .."

No safety system functional failure occurred, since the combined minimum flow path leakage rate was less than 0.6La.

Safety Significance

The measured total containment minimum pathway leakage was less than $0.6L_a$. If a condition requiring containment isolation had occurred, any releases would have been less than those assumed in the plant safety analysis. The health and safety of the public was not affected by this event.

Cause

AO-2-86C, Outboard Main Steam Isolation Valve on the "C" Main Steam Line
AO-2-86D, Outboard Main Steam Isolation Valve on the "D" Main Steam Line

The outboard Main Steam Isolation Valves are double disc gate valves with independent upstream and downstream discs. The upstream disc is equipped with a small hole to prevent pressure locking. The downstream disc therefore accomplishes the valve isolation function.

All four outboard Main Steam Isolation Valves were disassembled. Packing leakage, seating surface scratches (AO-2-86C only) and radial cracks in the disc seating surfaces were the cause of the excessive leakage in AO-2-86C and D.

Minor radial cracks were also found in AO-2-86B, Outboard Main Steam Isolation Valve on the "B" Main Steam Line. These radial cracks did not compromise the leak tightness of the valve.

Valve body wear was also discovered on all four valves, although it did not affect the isolation function. The upper portion of the downstream body seat and the valve body guides were worn by the disc rotating during service. The cause of the radial cracks is due to a combination of residual stresses from manufacturing and mechanical stress associated with the disc rotating during service and interacting with the stationary seats.

Reference – CR 20017070

MO-2397 Reactor Water Cleanup System Inlet Inboard Isolation Valve
MO-2398 Reactor Water Cleanup System Inlet Outboard Isolation Valve

The seating surface of MO-2397 was found to be gouged. The seating surface of MO-2398 was found to be severely scored. No source of the foreign material could be identified. These valves were replaced during the last refueling outage.

Reference – CR 20017090 and 20017091

CV-2790 RECIRC Sample Line Inboard Isolation Valve

The valve actuator bench setting was found to be lower that the manufacturer's recommendation. The leakage was caused by a small amount of corrosion products on the seats and the air operator had a spring setting below specifications.

Reference – CR 20017092

Actions

AO-2-86C, Outboard Main Steam Isolation Valve on the "C" Main Steam Line
AO-2-86D, Outboard Main Steam Isolation Valve on the "D" Main Steam Line

The downstream discs of all four outboard Main Steam Isolation Valves were replaced, the body seats were lapped and the valves were repacked. A galled stem on AO-2-86D was replaced.

All four valves were modified to prevent disc rotation.

The outboard Main Steam Isolation Valves were successfully retested.

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

MO-2397 Reactor Water Cleanup System Inlet Inboard Isolation Valve
MO-2398 Reactor Water Cleanup System Inlet Outboard Isolation Valve

The valve seats were repaired and were successfully retested. No source of the foreign material could be identified nor was any foreign material recovered..

CV-2790 RECIRC Sample Line Inboard Isolation Valve

The valve seats were cleaned and the air operator adjusted. The valve was successfully retested.

Failed Component Identification

AO-2-86C and D - Outboard Main Steam Isolation Valve on the "C" and "D" Main Steam Line
Valve Manufacturer: Flowserve (formerly Anchor/Darling Valve Company)
Size of Valve: 18" venturi
Pressure Class: 900 psig
Model Number: W9324183 (NX-56482)

MO-2397 and MO-2398
Valve Manufacturer: Flowserve (formerly Anchor-Darling)
Size of Valve: 4" double-disc gate valve
Pressure Class: 900 psig
Model Number: W9925312 (NX-9235-45), Serial Number E-758A-2-1 (MO-2397), E-758A-2-2 (MO-2398)

CV-2790

Valve Manufacturer: Flowserve (formerly Anchor/Darling Valve Company)
Size of Valve: 3/4" - Double Disc Gate Valve
Pressure Class: 1878 psig
Model Number: Valve Serial Number EB069-1-1 (Tech Manual NX-17293)

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

Similar Events In the Last Ten Years

There have been past LERs on failed Main Steam Isolation Valves of the inboard Main Steam Isolation Valve design, but there have been no failures of Main Steam Isolation Valves of the outboard valve design. Testing verified that the inboard Main Steam Isolation Valves performed the function properly. The inboard Main Steam Isolation Valves were original plant equipment and have a different design than the outboard valve design.

No other similar failures have occurred.

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FAILURE CONTINUATION

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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
X	AD	ISV	A391	Y					