NSP

Northern States Power Company

Monticello Nuclear Generating Plant
2807 West Hwy 75
Monticello, Minnesota 55362-9637

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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 2000-001

Containment Isolation Valve Leakage Greater than Allowed by Technical Specifications

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

Please contact Tom Parker at (612) 295-1014 if you require further information.

Byron Day

Byron Day
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III NRC
NRR Project Manager, NRC
Sr Resident Inspector, NRC
State of Minnesota, Attn: Steve Minn

Attachment

IE22

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
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 hrs. Reported lessons learned are incorporated into the licensing process and fed back to the industry. Forward comments regarding burden estimate to the Records Management Branch(T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 205555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4) Containment Isolation Valve Leakage Greater than Allowed by Technical Specifications

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
01	11	00	00	-- 001 --	00	02	10	00	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)	✓	50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	0 %		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)	
NAME	TELEPHONE NUMBER (Include Area Code)
Tom Parker	612-295-1014

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	SB	ISV	A585	Y	B	SB	ISV	A391	Y
B	VB	ISV	F130	Y	B	BN	ISV	A391	Y

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

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

Local leak rate testing 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) combined maximum flow path leakage rate for all containment penetrations and valves subject to Type B and C tests. The valves with excessive leakage were inspected and repaired as necessary. The redundant valves for the identified valves seated properly. Therefore, the health and safety of the public was not affected by this event.

Description

During the January 2000 refueling outage, local leak rate testing indicated that limits established in the Technical Specifications 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-2-80D[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." The leakage associated with three containment isolation valves, AO-2378[2], MO-2372[3] and RCIC-10,[4] caused this limit to be exceeded. See table below for more details.

Maximum flow path leakage is the total containment maximum pathway leakage which is the sum of the maximum leakage values that can be quantified through a penetration leakage path. This amount of containment leakage would exist if the valve with the lowest leakage in each penetration failed to close.

Valves with Excessive Leakage				Redundant Valves	
Test Date	Valve Name	Valve Description	"As Found" Leakage Rate[5]	Valve Name	"As Found" Leakage Rate
1/11/00	**AO-2-80D** Inboard Main Steam Isolation Valve on the "D" Main Steam Line	18" Air Operated, Wye-Pattern Equipped with Spring Assisted, Hydraulically Speed Controlled, Pneumatic Actuator.	238 scfh @ 25 psid	AO-2-86D	13 scfh @ 25 psid
1/21/00	**AO-2378** Torus Purge Inboard Containment Isolation Valve	18" Air Operated, Butterfly Valve	895 scfh @ 42 psid	AO-2377	1 scfh @ 42 psid
1/11/00	**MO-2373** Inboard Main Steam Line Drain	3" Motor Operated Gate Valve	353 scfh @ 42 psid	MO-2374	5 scfh @ 42 psid
1/15/00	**RCIC-10** RCIC Exhaust Check Valve	8" Lift Check Valve	112 scfh @ 42 psid	RCIC –9	<1 scfh @ 42 psid

1 EIIS System code = SB, EIIS Component Code = ISV
2 EIIS System code = VB
3 EIIS System code = SB
4 EIIS System code = BN
5 Standard Cubic Feet Per Hour = scfh or scf per hour

These valves were repaired prior to returning to a condition requiring containment integrity.

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."

Safety Significance

The redundant valves for the identified valves seated properly as shown in the above table. The measured total containment minimum pathway leakage was less than 0.6 x L_a. Therefore, the health and safety of the public was not affected by this event.

Cause

AO-2-80D

Following the failure of the leakage test, the valve was disassembled. The valve internals were found to be in good condition. The failure was caused by excessive seat friction which prevented the valve disc from sliding fully into its associated valve body seat.

AO-2378

This butterfly valve has a cam-actuated air valve that pressurizes a seating ring to minimize leakage. When the butterfly valve closes, an arm connected to the valve shaft actuates the cam-actuated air valve which pressurizes the "T" ring to seal the valve. The cam-actuated air valve was found to be stuck in the open position. Therefore, the "T" ring was inflated before the valve closed, inhibiting AO-2378 from fully closing and seating properly. Corrosion inside the cam-actuated air valve caused it to fail to operate properly.

MO-2373

Following the failure of the leakage test, the valve was disassembled. The valve internals were found to be in good condition. During subsequent lapping of the valve seats, a low spot was identified. No obvious cause for the leakage was identified.

RCIC-10

Following valve disassembly, a small portion of the resilient seat was found to be missing. The most likely cause of this failure is foreign material in the Reactor Core Isolation Cooling turbine exhaust line being entrained in the steam exhaust and striking the seat.

Actions

AO-2-80D

The existing 45 degree valve body seat was removed and a new 30 degree seat installed. The MSIV disc was replaced with a new disc equipped with a 30 degree seat and a slightly larger outside diameter. This reduced the clearances between the body and disc. The valve body and disc seat angle changes will reduce seat friction. The reduced clearances will minimize the distance the valve seat must slide up into its seat. Both of these changes will help ensure the valve fully seats in the future. Following these changes, the valve was successfully retested.

AO-2378

A new cam-actuated air valve was installed. Other similar cam-actuated air valves were inspected, and no other similar valve problems were found.

MO-2373

The valve seats were lapped and the valve retested satisfactorily. This valve will be leak tested again prior to entering a condition which requires containment integrity.

A root cause evaluation will be performed on this failure.

RCIC-10

A new resilient seat was installed. The valve was retested successfully. The accessible portions of the Reactor Core Isolation Cooling exhaust line were inspected with a fiberscope and no foreign material was found. The possibility of foreign material being discharged from the turbine was also evaluated and this was found to be very improbable.

Failed Component Identification

AO-2-80D - Inboard Main Steam Isolation Valve on the "D" Main Steam Line

Valve body manufactured by Atwood & Morrill Company. Stem and Disc manufactured by Anchor/Darling Company. Actuator manufactured by Hydro-Line Manufacturing Company.

AO-2378 - Torus Purge Inboard Containment Isolation Valve

FISHER, 9210 W/656-60, 18"

MO-2373 - Inboard Main Steam Line Drain

Anchor/Darling, 3", Class 900, Double Disc Gate Valve with a SMB-00-10 Limitorque Actuator

RCIC-10 - RCIC Exhaust Check Valve

Anchor Darling 150# Lift Check Valve, 8"

Similar Events In the Last Ten Years

AO-2-80D - Inboard Main Steam Isolation Valve on the "D" Main Steam Line

The following Licensee Event Reports have been written associated with "D" Main Steam Isolation Valve: 91005, 93003, 94010 and 98001.

Licensee Event Report 98001 reported the failure of "D" Main Steam Isolation Valve to meet Technical Specification leakage limits. The following repairs were performed:

New closure springs were installed providing increased seating thrust. Actuator testing demonstrated an additional 10% thrust with the new springs. This restored the original thrust output of the valve actuator. The valve seating surface was re-centered.

AO-2378 - Torus Purge Inboard Containment Isolation Valve

Licensee Event Report 98001 excessive leakage. A different cause was identified for this failure.

MO-2373 - Inboard Main Steam Line Drain

No previous similar events.

RCIC-10 - RCIC Exhaust Check Valve

No previous similar events.