



Northern States Power Company

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May 12, 1994

10 CFR Part 50
Section 50.73

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Inoperability of One Train of Post-Accident
Containment Hydrogen Monitoring

The Licensee Event Report for this occurrence is attached. In the report, we made one new NRC commitment:

The subject surveillance procedures will be revised to record as-left containment data explicitly, provide technicians better instructions on critical steps, and provide cautions in steps that could corrupt calibration constants.

Please contact us if you require additional information related to this event.

Roger O. Anderson
Director
Licensing and Management Issues

c: Regional Administrator - Region III, NRC
NRR Project Manager, NRC
Senior Resident Inspector, NRC
Kris Sanda, State of Minnesota

Attachment

9405180357 940512
PDR ADOCK 05000306
S PDR

JE22

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Prairie Island Nuclear Generating Plant U2

DOCKET NUMBER (2)

05000 306

PAGE (3)

1 OF 4

TITLE (4) Inoperability of One Train of Post-Accident Containment Hydrogen Monitoring

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
04	12	94	94	-- 01 --	00	05	12	94	Prairie Island U1	05000 282
OPERATING MODE (9) N			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10) 100%			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
			20.405(a)(1)(iii)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)	
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)			
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

Arne A Hunstad

TELEPHONE NUMBER (Include Area Code)

612-388-1121

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES
(If yes, complete EXPECTED SUBMISSION DATE).

X MO

EXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

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

On April 12, 1994 an I&C Technician was performing a routine surveillance test of the Unit 2 containment hydrogen monitors. When taking as-found readings, the technician noticed that the containment pressure reading on Train B was significantly out of specification. The calibration constants were read, and it was then discovered that the Total Pressure Offset constant was in error. The technician entered the correct value, as directed by the procedure, and notified the system engineer. At the conclusion of the test, the technician and the system engineer reviewed the procedure and calibration card data. Based on review of previous surveillance data and discussions with several technicians, it was determined that the Train B hydrogen monitor had probably been inoperable since March 15, when the monthly test had last been performed. The technician that performed the March 15 test apparently had made an erroneous keystroke while displaying containment data. After the Total Pressure Offset was read, the technician should have pushed the ENTER key to move on to the next calibration constant. Instead, it appears the technician pushed the NEW CONSTANT key inadvertently, and then when the ENTER key was pushed, the incorrect calibration constant was entered. Procedures will be revised to prevent recurrence.

NRC FORM 366A (5-92)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95							
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION				ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.							
FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)							
Prairie Island Unit 2		05000 306		<table border="1"> <tr> <td>YEAR</td> <td>SEQUENTIAL NUMBER</td> <td>REVISION NUMBER</td> </tr> <tr> <td>94</td> <td>-- 01 --</td> <td>00</td> </tr> </table>		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	94	-- 01 --	00
YEAR	SEQUENTIAL NUMBER	REVISION NUMBER									
94	-- 01 --	00									
				PAGE (3)							
				2 OF 4							

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

EVENT DESCRIPTION

On April 12, 1994 Unit 2 was at 100% power. An Instrument & Controls Technician was performing routine surveillance procedure SP1226A, Containment Hydrogen Monitor Monthly Test. The procedure verifies that correct calibration constants are being used in the post-accident containment hydrogen monitor computer. When taking as-found readings, the technician noticed that the containment pressure reading on Train B was 42.1 atmospheres, significantly out of specification. A normal reading is 1.0 atmospheres. The as-found data were recorded. The calibration constants were read, and it was then discovered that the Total Pressure Offset constant had a value of 41.0. Comparison of the data against the results of the latest calibration revealed that the offset should have been -0.0426. The technician entered the correct value, as directed by the procedure, and notified the system engineer. At the conclusion of the test, the technician and the system engineer reviewed the procedure and calibration card data to determine the reason for the incorrect calibration constant.

The vendor was consulted to assist in determining operability of the monitor. The vendor confirmed that an additional 41.0 atm of pressure would be added, offsetting actual measured containment pressure, so that indicated hydrogen concentration would be significantly lower than actual.

Based on a review of previous surveillance data and discussions with several technicians, it was determined that the Train B hydrogen monitor had probably been inoperable since March 15, 1994 when the monthly test had last been performed.

The technician that performed the March 15 test was also interviewed. The last step in the channel test is to verify that containment data are displayed normally. The technician completed this step, but then read the calibration constants again, which is incorrect. After the Total Pressure Offset was read, the technician should have pushed the ENTER key to move on to the next calibration constant. Instead, it appears the technician pushed the NEW CONSTANT key inadvertently, and then when the ENTER key was pushed, the incorrect calibration constant was entered.

CAUSE OF THE EVENT

The surveillance procedure is deficient in some areas. It is not clear about which data is required to verify operability. It could easily be misconstrued that verification of calibration data is required in addition to the containment data. Also, the procedure requires observation but not

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recording of as-left containment readings.

Calibration data was corrupted when accessed improperly and not checked afterwards. Accessing the calibration constants followed from a misunderstanding of the verification requirements. The procedure could have prevented the event that caused improper calibration constants to be introduced had the procedure provided the technician more specific direction on verification requirements, provided explicit cautions at certain key points in the procedure prior to accessing any calibration data, and recorded as-left containment data.

The installed equipment has some limitations that require careful consideration when maintaining the system. For example, calibration constants cannot be read directly without introducing the possibility of altering them.

ANALYSIS OF THE EVENT

The event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) since one train of post-accident hydrogen monitoring was inoperable for more than 7 days, in violation of Technical Specification 3.15.A.1. Train B of Unit 2 post-accident hydrogen monitoring was inoperable from March 15 to April 12, 1994. Train A was operable throughout the period. Unit 1 was unaffected by this event.

The error in Total Pressure Offset would have caused the hydrogen monitor to read lower percent volume of hydrogen than actual. The error varies with containment pressure, such that the hydrogen concentration read at low containment pressure would be about 1/40th of actual and at high containment pressure would be about 1/2 of actual.

Recalibration of the monitors is required about 24 hours after the postulated accident. Recalibration would have corrected the error. Venting of containment gases based on hydrogen concentration does not occur until at least 10 days after the accident. Likewise, operation of the hydrogen recombiners based on hydrogen concentration is not required until several days after the accident. For the above reasons, health and safety of the public was not affected.

CORRECTIVE ACTION

The surveillance procedures will be revised to record as-left containment data explicitly, provide technicians better instructions on critical steps, and provide cautions in steps that could corrupt calibration constants.

This event will be reviewed by I&C engineers, supervisors, technicians and

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Prairie Island Unit 2		05000 306		YEAR 94	SEQUENTIAL NUMBER -- 01 --
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trainers.

FAILED COMPONENT IDENTIFICATION

None.

PREVIOUS SIMILAR EVENTS

There have been no previous similar events reported at Prairie Island. As followup to Unit 1 LER 93-003 describing instrument miscalibration, a generic review of I&C activities was done and several procedures were identified for potential enhancements to help prevent recurrence of such events. SP1226A was one of those procedures identified, but revisions had not been fully implemented.