

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Prairie Island Unit 1 DOCKET NUMBER (2) 050002821 OF 03

TITLE (4) Steam Generator Leakage Above 1.0 GPM

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 NAMES	DOCKET NUMBER(S)						
1	0	2	9	8	4	8	4	0	1	0	0	0	0	0	0	0
1	0	2	9	8	4	8	4	0	1	0	0	0	0	0	0	0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)															
POWER LEVEL (10)	01613	20.402(b)				20.405(a)				50.73(a)(2)(iv)				73.71(b)			
		20.405(a)(1)(i)				50.38(a)(1)				50.73(a)(2)(v)				73.71(a)			
		20.405(a)(1)(ii)				50.38(a)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 388A)			
		20.405(a)(1)(iii)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(A)							
		20.405(a)(1)(iv)				50.73(a)(2)(iii)				50.73(a)(2)(viii)(B)							
20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)									

LICENSEE CONTACT FOR THIS LER (12)  
NAME Arne A Hunstad, Staff Engineer TELEPHONE NUMBER 612388-1121  
AREA CODE 612388-1121

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM

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

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

Steam generator tube leakage forced shutdown of Unit 1. Leaking tubes were plugged.

IE 22  
1118412060618 841128  
PDR ADDOCK 05000282  
S PDR

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/86

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Prairie Island Unit 1	0 5 0 0 0 2 8 2 8 4	—	0 1 1 0	—	0 0 0 2	OF 0 3	

TEXT (If more space is required, use additional NRC Form 386A's) (17)

In December 1983, at refueling, 100% eddy current inspection (ECT) of both Unit 1 steam generators (SG) was done. Shortly after restart minor leakage was detected in No. 11 steam generator. By February 1984 the leakage was measured at 0.03 gpm. As a result, independent third party review of the eddy current data produced during the December 1983 inspection was done. This review disclosed that there were 3 tubes with indications greater than 50% thru-wall. All the indications were in the tubesheet region. These tubes were:

<u>SG</u>	<u>Tube</u>
#11	R7C94 (Row 7, Column 94)
#12	R6C93
#12	R13C15

Analysis showed that there was no safety concern with continued operation of the unit, but a commitment was made to shut down and plug those tubes if leakage reached 0.3 gpm. At 0234 on October 21st the leakage did reach 0.3 gpm in No. 12 SG so the unit was brought to cold shutdown. Maximum leakage observed was 0.65 gpm in No. 12 SG.

While shutdown, No. 11 SG secondary side was pressurized to 600 psig; tube R25C87 was seen to be leaking. ECT showed that the defect to be at the 7th tube support plate on the cold leg side. Twenty-five tubes in the vicinity of the defective tube were also examined and comparison made with the December 1983 data; indications were similar in size and location. Tubes R7C94 and R25C87 were plugged in No. 11 SG.

In No. 12 SG, leakage was observed but not recorded as the manways were removed. The secondary side of the SG was pressurized to 600 psig and held for 4 hours with no leakage detected. Pressure was increased to 800 psig but still no leakage was observed. When the SG was depressurized, dampness was observed at tube R17C42 on the hot leg. ECT of the tube showed multiple, discrete tube wall penetrations exceeding the Tech Spec plugging limit in the tube sheet area. Tubes R17C42, R6C93 and R13C15 were plugged.

On unit restart on October 28th, activity level in No. 11 SG was seen to be decreasing, but activity in No. 12 SG was increasing. Shutdown was again initiated, but before it was completed leakage reached 1.22 gpm at 0636 on October 29th. Maximum leakage reached before shutdown was about 3.5 gpm.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/85

FACILITY NAME (1)  Prairie Island Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 2 8 2 8 4 -	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 1 0	0 0	0 0	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 386A's) (17)

Visual examination showed leakage in tube R18C45 in No. 12 SG. ECT of the tube again showed multiple large tube wall penetrations in the tubesheet area. A Tech Spec C-1 type sampling program was done. In addition, nearly 100% of tubes were inspected in the hot leg tubesheet region up to the first tube support plate. This inspection detected an indication in tube R9C26 in the tubesheet region. Tubes plugged were R18C45, R9C26, R37C75 and R34C78, the last two preventive since they had indications in the 45% range. The unit was restarted on November 7th and there is no indication of leakage.

Cause of the tube failures appears to be intergranular attack in the tubesheet crevice region. The mechanism appears to be common in older steam generators, particularly those that were once on phosphate chemistry control. At the upcoming Unit 1 outage, 100% ECT and sludge lancing will be done. Several tubes will be removed for analysis of the failure mechanism. At heatup, crevice flushing will be done to try to remove contaminants from the crevice region.



Northern States Power Company

414 Nicollet Mall  
Minneapolis, Minnesota 55401  
Telephone (612) 330-5500

November 28, 1984

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
Docket No. 50-282 License No. DPR-42

Steam Generator Leakage Above 1.0 GPM

The License Event Report for this occurrence is attached.

This event was reported via Emergency Notification System per 10 CFR Part 72  
on October 29, 1984.

*Eugene Eckhardt*  
for David Musolf  
Manager - Nuclear Support Services

DMM/EFE/dab

c: Regional Administrator-III, NRC  
NRR Project Manager, NRC  
Resident Inspector, NRC  
MPCA  
Attn: J W Ferman

Attachment

IE22  
11