APS

Palo Verde Nuclear Generating Station

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10CFR50.73

192-01133-DMS/SAB/DGM/DFH
January 21, 2003

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS) Unit 2
Docket No. STN 50-529
License No. NPF-51
Licensee Event Report 2003-003-00

Attached, please find Licensee Event Report (LER) 50-529/2003-003-00 that has been prepared and submitted pursuant to 10CFR50.73. The LER reports a condition where a Source Range Monitor was inoperable at the start of core reload while loading the first two fuel assemblies, following a refueling outage involving complete core offload.

In accordance with 10CFR50.4, a copy of this LER is being forwarded to the NRC Regional Office, NRC Region IV and the Resident Inspector. If you have questions regarding this submittal, please contact Daniel G. Marks, Section Leader, Regulatory Affairs, at (623) 393-6492.

Arizona Public Service Company makes no commitments in this letter. The corrective actions described in this LER are not necessary to maintain compliance with regulations.

Sincerely,

DMS/SAB/DGM/DFH/kg

Attachment

cc: B. S. Mallett — NRC Region IV Administrator
N. L. Salgado — NRC Senior Resident Inspector for PVNGS
M. B. Fields — NRC NRR Project Manager

IE22

NRC FORM 366 (7-2001)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

SOURCE RANGE MONITOR INOPERABLE DURING CORE RELOAD

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	23	2003	2003	– 003	– 00	01	21	2004	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	6
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)	xx	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)
Daniel G. Marks, Section Leader, Regulatory Affairs	623-393-6492

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

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)

On November 23, 2003, Unit 2 was defueled preparing to enter Mode 6, when a Source Range Monitor (SRM) was found pegged low and reading "INVALID" on the Plant Monitoring System (PMS), and Emergency Response Facility Data Acquisition Display System (ERFDADS). Technicians evaluated the channel and found all parameters within the nuclear instrument drawer to be normal. Based on the limited troubleshooting, the length of time since fuel had been off loaded and the absence of any neutron flux, the requirements of the ST were considered satisfactory. With both SRM Channels declared as "Operable", the "Irradiated Fuel Movement Checklist" was completed and Unit 2 entered Mode 6.

Unit 2 commenced core alterations to refuel the Unit 2 reactor. The first fuel assembly was lowered next to SRM Channel #1 with counts per second increasing as expected. However, as the second assembly was lowered next to SRM Channel #2, the counts per second did not change. At 16:25 (MST) SRM Channel #2 was declared Inoperable and core alteration was suspended.

No similar LER condition has been submitted to the NRC in the past three years.

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

1. REPORTING REQUIREMENT(S):

APS is reporting this condition pursuant to 10 CFR 50.73(a)(2)(i)(B). Two fuel assemblies were moved into the core with one Source Range Monitor (SRM) channel inoperable. (EIIC Code: IG).

Technical Specification 3.9.2, states, in part:

LCO *Two startup monitors (SRMs) shall be OPERABLE.*
Applicability: *MODE 6.*

Condition A: *One required SRM inoperable.*
Required Action A.1: *Suspend CORE ALTERATIONS.*
(Completion time: Immediately)
AND
Required Action A.2: *Suspend positive reactivity additions.*
(Completion time: Immediately)

Contrary to the requirements of TS 3.9.2, core alteration commenced with one channel of SRM inoperable. Core alteration was immediately suspended complying with Action A.1 and A.2.

2. DESCRIPTION OF STRUCTURE(S), SYSTEM(S) AND COMPONENT(S):

The Excore Neutron Flux Monitoring System (EIIS Code: IG) includes neutron detectors located around the reactor core and signal conditioning located in the control room area. Neutron flux is monitored from source levels through full power operation, and signal outputs are provided for reactor control, reactor protection and information display.

Two source range monitors, also known as "startup channels" provide source level neutron flux information (in the range of counts to a power range, of less than 10^{-5} percent power) to the reactor operator for use during extended shutdown periods, initial reactor startup and startups after extended periods of reactor shutdown. Each channel consists of a dual section proportional counter assembly with each section having multiple BF_3 proportional counters, one pre-amplifier located outside the biological shield, and a signal processing drawer (located in the Control Room) containing power supplies, a logarithmic amplifier, and test circuitry.

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High voltage power to the proportional counters is manually switched off when the SU AND CONT CH TRBL annunciator is activated in the main control room (above approximately 2000 counts per second), to extend detector life. These channels provide readout and audio count rate information, but do not provide direct control or protective functions.

3. INITIAL PLANT CONDITIONS:

On November 23, 2003, at approximately 16:25 Mountain Standard Time (MST), Palo Verde Unit 2 was in Mode 6 commencing core alteration to reload the Unit 2 reactor.

There were no other major structures, systems, or components that were inoperable at the start of the event that contributed to the event. There were no failures that rendered a train of a safety system inoperable and no failures of components with multiple functions were involved.

4. EVENT DESCRIPTION:

On November 23, 2003, at approximately 14:12 (MST) Unit 2 was defueled preparing to enter Mode 6. While performing a Mode 6 Shiftly Surveillance Test (ST), SRM Channel #2 was found pegged low and reading "INVALID" on the Plant Monitoring System (PMS) and the Emergency Response Facility Data Acquisition Display System (ERFDADS). Since the channel was off scale low, no audible signal was detected. Technicians evaluated the channel and found all parameters within the excore nuclear instrumentation drawer normal. Additionally, when a test signal was provided as an input to SRM Ch. 2, audible counts were heard in the Control Room and Containment and ERFDADS came on scale and indicated properly. The zero counts condition was considered a normal response due to the length of time since fuel had been off loaded and the absence of any neutron flux. Based on the troubleshooting and the length of time the core was defueled, the requirements of the ST were considered satisfactory and both SRM Channels were declared "Operable".

At approximately 15:19 (MST) the "Irradiated Fuel Movement Checklist was completed and Unit 2 entered Mode 6. Unit 2 commenced core alteration to refuel the Unit 2 reactor at 16:02 (MST).

The first fuel assembly was lowered next to SRM Channel #1 with counts per second increasing as expected. However, as the second assembly was lowered next to SRM

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Channel #2, the counts per second did not change. At 16:25 (MST), SRM Channel #2 was declared Inoperable and core alteration was suspended. This condition has been documented in the corrective action program.

There were no other major structures, systems, or components that were inoperable at the start of the event that contributed to the event. There were no actual loss of safety function that rendered a train of a safety system inoperable, and no failures of components with multiple functions were involved. The event did not result in the release of radioactivity to the environment and did not adversely affect the safe operation of the plant or health and safety of the public.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

The excore nuclear instrument channels provide readout and audio count rate information, but do not provide direct control or protective functions. Additionally, boron sample prior to the event was at 4256 ppm. After the event at 18:05 RCS boron concentration was 4263 ppm. The safety function to shut down the reactor and maintain it in a safe shutdown condition remained fulfilled.

There are no actual safety consequences as a result of this condition, the condition would not have prevented the fulfillment of the safety function, and the condition did not result in a safety system functional failure as defined by 10 CFR50.73 (a) (2) (v).

6. CAUSE OF THE EVENT:

The direct cause of the event was a loose cable connector in the SRM Channel #2 input cable at the Auxiliary Building/Containment penetration. The root and contributing causes to the equipment failure and the decision making to proceed with core reload will be determined with the completion of the investigation.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event.

7. CORRECTIVE ACTIONS:

Technicians disconnected the cable from the penetration connection and visually inspected the connector. No damage was found. The connector was reconnected to the penetration. A channel check of the SRM Ch.2 was performed satisfactorily and SRM Ch.2 was declared Operable.

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Any additional corrective actions taken as a result of the investigation of this event will be implemented in accordance with the APS corrective action program. If information is subsequently developed that would significantly affect a reader's understanding or perception of this event, a supplement to this LER will be submitted.

8. PREVIOUS SIMILAR EVENTS:
In the past three years there have been no similar LER submitted to the NRC where a Palo Verde Generating Unit had a failed SRM Channel during core alterations.

9. ADDITIONAL INFORMATION:
None.