



A subsidiary of Pinnacle West Capital Corporation

10 CFR 50.73

Palo Verde Nuclear
Generating Station

Dwight C. Mims
Vice President
Regulatory Affairs and Plant Improvement

Tel. 623-393-5403
Fax 623-393-6077

Mail Station 7605
P. O. Box 52034
Phoenix, Arizona 85072-2034

102-05874-DCM/DCE
July 28, 2008

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 2008-002-00**

Attached, please find Licensee Event Report (LER) 50-529/2008-002-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports a manual reactor trip that occurred during low power physics testing.

In accordance with 10 CFR 50.4, copies of this LER are being forwarded to the NRC Regional Office, NRC Region IV and the Senior Resident Inspector. If you have questions regarding this submittal, please contact James A. Proctor, Section Leader, Regulatory Affairs, at (623) 393-5730.

Arizona Public Service Company makes no commitments in this letter.

Sincerely,
D.C. Mims

DCM/JAP/DCE/gat

Attachment

cc: E. E. Collins Jr. NRC Region IV Regional Administrator
M. T. Markley NRC NRR Project Manager - (send electronic and paper)
R. I. Treadway NRC Senior Resident Inspector for PVNGS

A member of the **STARS** (Strategic Teaming and Resource Sharing) Alliance
Callaway • Comanche Peak • Diablo Canyon • Palo Verde • South Texas Project • Wolf Creek

*IE22
NRR*

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/PriVacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 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.

1. FACILITY NAME Palo Verde Nuclear Generating Station (PVNGS) Unit 2	2. DOCKET NUMBER 05000529	3. PAGE 1 OF 4
---	-------------------------------------	--------------------------

4. TITLE
Manual Reactor Trip During Low Power Physics Testing

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
05	28	2008	2008	- 002 -	00	07	28	2008		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 2	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 000	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER							
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A							

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME James A. Proctor, Section Leader, Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) 623-393-5730
---	--

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AA	52	H141	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On May 28, 2008, at approximately 21:34 (MST), while performing Low Power Physics Testing (LPPT) in Mode 2, Palo Verde Unit 2 was manually tripped as directed by procedure 40AO-9ZZ11, "CEA Malfunctions", when Control Element Assemblies (CEA) subgroup 3 (CEAs 7, 9, 11 and 13) dropped from approximately 120 inches withdrawn to fully inserted.

The circuit breaker for subgroup 3 CEAs was found open. The root cause was indeterminate. The probable cause was high resistance on the subgroup breaker contacts. The circuit breaker was replaced. A repetitive task will be added to Operations procedures to cycle subgroup breakers each refueling outage to minimize the likelihood of similar occurrences.

A CEA slipped several inches and resulted in a manual reactor trip in Unit 1 on May 8, 2004 and was reported on LER 50-528/2004-003-00.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2008	-- 002	-- 00	

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

All times are Mountain Standard Time and approximate unless otherwise indicated.

1. REPORTING REQUIREMENT(S):

This LER is being submitted pursuant to 10 CFR 50.73 (a)(2)(iv)(A) to report a manual actuation of the reactor protection system (EIS: JC).

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

The control element assemblies (CEAs) (EIS Code: AA) provide a mechanical means to shutdown the reactor and regulate reactor power. The CEAs are withdrawn from the reactor core to achieve the critical condition and they are inserted into the core when a reactor shutdown is initiated. There are a total of 89 CEAs as part of the Combustion Engineering (CE) System 80 reactor design.

The Control Element Drive Mechanism (CEDM) (EIS Code: AA), also known as a magnetic jack, is an electro-mechanical device that uses induced magnetic fields to operate a mechanism for moving a CEA.

The control element drive mechanism control system (CEDMCS) (EIS Code: AA), provides drive signals to the coils of the magnetic-jack control element drive mechanisms (CEDMs) which position and hold the reactor control element assemblies (CEAs). CEDMCS controls full strength CEAs either automatically or manually, and power shaping (part strength) CEAs manually, as required.

Two motor/generator sets connected in parallel to a common bus, supply 240 VAC, 3φ power through two parallel sets of two reactor trip circuit breakers. These four breakers and their controls make up the reactor trip switchgear (RTSG). The output from the RTSG is directed through circuit breakers for subgroups of CEAs and downstream individual CEA circuit breakers (EIS: 52) and then through power switch assemblies containing silicon controlled rectifiers (SCRs) converting the 3φ, AC power to a smoothed DC output. This smoothed DC output is then divided and distributed throughout the CEDMCS cabinets for ultimate delivery to the CEDM coils for 89 CEAs.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
		2008	-- 002	-- 00	

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

3. INITIAL PLANT CONDITIONS:

On May 28, 2008, at 21:31, Palo Verde Unit 2 was at normal operating temperature (NOT) and normal operating pressure (NOP) in Mode 2 at 1.6E-2 percent power. Low Power Physic Testing (LLPT) was in progress following the 14th refueling outage.

There were no other major structures, systems, or components that were inoperable at the start of the event that contributed to the event.

4. EVENT DESCRIPTION:

At 21:31 on May 28, 2008, Unit 2 was performing low power physics rod worth measurements and CEA shutdown group A, subgroups 3 and 4, were being inserted into the core. During low power physics testing, CEA shutdown group A, subgroup 3 (CEAs 7, 9, 11 and 13), dropped from approximately 120 inches withdrawn to fully inserted. Testing was suspended and the control room supervisor (utility – licensed) entered the "CEA Malfunctions" procedure, 40A0-9ZZ11, which directs tripping the reactor if one CEA is deviating from its group by more than 6.6 inches. The reactor operator (utility – licensed) manually tripped the reactor and the plant was stabilized in Mode 3. No abnormalities were noted following the reactor trip.

CEA subgroup 3 circuit breaker (CB3003), on the back of the CEDMCS cabinet power switch assembly, was found in the open position.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

The event did not result in a transient more severe than those previously analyzed in the PVNGS UFSAR, Chapter 15. The event was considered an uncomplicated reactor trip. The reactor trip was not automatically initiated as a result of any of the categories defined in UFSAR Section 15.0.1.2. The Specified Acceptable Fuel Design Limits and reactor coolant system pressure limit were not exceeded. Equipment and systems assumed in UFSAR Chapter 15 were functional and performed as required.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
		2008	-- 002	-- 00	

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

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 CFR 50.73 (a)(2)(v).

6. CAUSE OF THE EVENT:

The CEAs dropped because the associated CEA subgroup 3 circuit breaker CB3003 opened. The root cause was indeterminate. The probable cause was high contact resistance on the "A" phase of circuit breaker CB3003 which led to the circuit breaker tripping on overcurrent and the subsequent manual reactor trip due to 4 dropped CEAs.

7. CORRECTIVE ACTIONS:

The circuit breaker CB3003 was replaced. To minimize the resistance buildup on CEA circuit breakers, the remaining Unit 2 CEA subgroup circuit breakers were cycled twice (opened twice and closed twice) to clean the circuit breaker contacts. A repetitive task will be added to Operations procedures to cycle CEA subgroup breakers each refueling outage to minimize the likelihood of similar occurrences. These breakers have not been routinely cycled in the past.

8. PREVIOUS SIMILAR EVENTS:

Four events occurred in the recent history in which CEAs slipped several inches related to CEDMCS problems, one of which resulted in a manual reactor trip (LER 50-528/2004-003-00, May 8, 2004). The May 2004 event and two other events involved electronic problems with card connectors or card failures. One additional event involved sluggish operation of a CEA magnetic jack. None of the four events were related to subgroup or individual CEA circuit breaker problems and none involved dropping CEAs to the fully inserted position.