

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 1						DOCKET NUMBER (2) 0 5 0 0 0 5 2 8			PAGE (3) 1 OF 0 2	
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TITLE (4)
Azimuthal Power Tilt Not Verified

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)															
0	9	2	4	8	5	8	5	0	7	0	0	1	0	2	5	8	5			0	5	0	0	0		

OPERATING MODE (8) 1

POWER LEVEL (10) 0 | 5 | 1

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(e)
20.406(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
William F. Quinn, Manager - Nuclear Licensing (Extension 4087)	6 0 2 9 4 3 - 7 2 0 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
X	I G	C P U	C 4 9 0	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

At 1900 on September 23, 1985, Unit 1 was in Mode 1 at 51 percent reactor power when one Control Element dropped into the reactor core. This resulted in a Technical Specification core AZIMUTHAL POWER TILT limit being exceeded. Technical Specification 3.2.3, ACTION (b)(3), requires that the AZIMUTHAL POWER TILT be verified to be within its limit at least once per hour for 12 hours after exceeding the limit. The readings were taken but the data was erroneous.

A loss of reactor core power distribution monitoring (IG) went undetected for approximately 8 hours on September 24, 1985, during the period when it was required to comply with the ACTION statement. The monitoring loss was caused by a hardware failure in a computer system. Alternate methods were available had the loss been identified.

The hardware problem was corrected and the computer software was modified to make the loss of incore monitoring more easily recognizable to Control Room personnel.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 5	- 0 7 0	- 0 0	0 2	OF 0 2

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

On September 24, 1985, at 0136, Palo Verde Unit 1 was at 51 percent reactor power when the incore processing program (IG) in one of the plant computers stalled due to a hardware error. This stall went unnoticed by Control Room personnel for over eight hours. The incore processing program processes data from 305 fixed incore neutron detectors. This data is used for monitoring linear heat rate (LHR), departure from nucleate boiling ratio (DNBR), AXIAL SHAPE INDEX (ASI), and core AZIMUTHAL POWER TILT.

At 1900 on September 23, 1985, the Technical Specification core AZIMUTHAL POWER TILT limit was exceeded due to a dropped rod. Although the rod was recovered and the AZIMUTHAL POWER TILT returned to within its limits within the allowed ACTION statement time, hourly monitoring of AZIMUTHAL POWER TILT is required by Technical Specification 3.2.3, ACTION (b)(3), for 12 hours after such an event if reactor power is above 50 percent rated thermal power. Due to the incore program stall, this requirement was not met for the last six hours of the required period. AZIMUTHAL POWER TILT readings were being taken but the data was erroneous due to the program stall. Additionally, logging of LHR, DNBR, and ASI every two hours as required by the Technical Specifications, when the fixed incore system is out of service, was not performed.

The incore program stall was discovered at 0945 on September 24, 1985. Immediate corrective action involved performance of the required surveillance procedures not dependent on the incore detector system. The incore program was returned to service at 1017 on September 24, 1985. Hardware diagnostics were later run which resulted in the replacement of two connectors in the computer system.

The incore processing program performs a monitoring function only, it does not provide any safety-related actuation function. During the event, values for LHR, DNBR, and ASI remained available from four minicomputers in the reactor core protection calculators, which do not use information from the fixed incore detector system. AZIMUTHAL POWER TILT may be manually calculated from these computers if needed. Plant conditions remained stable during the event. Hourly logs of LHR, DNBR, ASI, and AZIMUTHAL POWER TILT before the stall, and surveillance performed after discovery of the stall, indicate that these parameters were within their limits before and after the event. The reactor power distribution was stable at 51 percent power and thus it is believed that no Technical Specification LCO violation occurred during the event. Had a transient occurred, the plant computer would not have detected any associated core power distribution changes, but any required protective action remained available. Therefore, this event had no impact on the safe operation of the plant.

The occurrence of an incore program stall resulted in an audible alarm in the Control Room and an alarm message on a CRT screen. The operators did not recognize the problem as an incore stall. In the event of a stall, outputs of the incore program are not updated, and remained tagged as good at the last calculated value so under steady state conditions an incore stall is difficult to notice. As a result of this event, the computer software was modified to make an incore stall more readily recognizable by Control Room personnel. This modification causes the computer to tag all outputs from the incore program and affected calculations as invalid in the event of a program stall. When the data is tagged as invalid, Control Room personnel can not retrieve the information. This in turn outputs an alarm by the computer using data from the incore program.

No similar events have occurred previously.



Arizona Nuclear Power Project

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October 25, 1985
ANPP-33809-EEVB/GEC

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528, License No. NPF-41
Licensee Event Report - Azimuthal Power
Tilt Not Verified
File: 85-056-026; G.1.01.10

Dear Sirs:

Attached please find Licensee Event Report (LER) No. 85-070-00 prepared and submitted pursuant to 10 CFR 50.73. This LER addresses the AZIMUTHAL POWER TILT not being verified as required by the Technical Specifications. In accordance with 10 CFR 50.73(d), we are herewith forwarding a copy of the LER to the Regional Administrator of the Region V Office.

If you have any questions please contact me.

Very truly yours,

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/GEC/ds
Attachment

cc: J. B. Martin (all w/a)
R. P. Zimmerman
A. L. Hon
E. A. Licitra
A. C. Gehr
INPO Records Center

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