

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 5 2 9										PAGE (3) 1 OF 0 3	
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TITLE (4)

CREFAS Initiated by Radiation Monitor Flow Switch Induced Power Supply Spikes

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	2	1	9	8	5	8	5	-	0	0	1	-	0	0	0	1	1	7	8	6	0 5 0 0 0 0				
														0 5 0 0 0 0											

OPERATING MODE (9) 6		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																	
POWER LEVEL (10) 0 1 0 1 0		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 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)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(vii)(A)									
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)									
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)									

LICENSEE CONTACT FOR THIS LER (12)

NAME William F. Quinn, Manager - Nuclear Licensing (Extension 4087)										TELEPHONE NUMBER 6 1 0 1 2 9 4 1 3 1 - 1 7 1 2 1 0 1 0									
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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

SUPPLEMENTAL REPORT EXPECTED (14)

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

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

At 0835 MST on December 19, 1985, Palo Verde Unit 2 was in Mode 6, REFUELING, when a spurious automatic actuation of an Engineered Safety Feature (ESF)(JE) was initiated as a result of electrical noise spiking on a control room ventilation intake noble gas radiation monitor (IL).

The event resulted in the Train "A" control room ventilation intake noble gas radiation monitor (RU-29) initiating a Train "A" control room essential filtration actuation signal (CREFAS) and the subsequent cross-trip of a Train "B" CREFAS.

The cause of the spurious CREFAS actuation has been traced to noise generated by an unused pair of contacts on the radiation monitor flow module. When the unused contacts cycle, a "chatter" results. This "chatter" feeds back into the monitor power supply grounding system, resulting in power supply voltage spikes coincident with erroneous high radiation reading spikes.

As a corrective action, permanent hardware changes have been made to the Unit 2 control room ventilation intake noble gas radiation monitors to prevent the unused flow contacts from causing further spurious ESF actuations.

A similar event occurred in Unit 2 on December 18, 1985. This event is described in LER 85-004-00.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)  Palo Verde Unit 2	DOCKET NUMBER (2)  0 5 0 0 0 5 2 9 8 5 - 0 0 1 - 0 0 0 2 OF 0 3	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At 0835 MST on December 19, 1985, Palo Verde Unit 2 was in Mode 6, REFUELING, when a spurious automatic actuation of an Engineered Safety Feature (ESF)(JE) was initiated as a result of electrical noise spiking on a control room ventilation intake noble gas radiation monitor (IL).

The event resulted in the Train "A" control room ventilation intake noble gas radiation monitor (RU-29) initiating a Train "A" control room essential filtration actuation signal (CREFAS) and the subsequent cross-trip of a Train "B" CREFAS. Initiation of a CREFAS is an ESF actuation (JE).

Following the CREFAS actuation, a grab sample of control room intake air was taken to ensure that the high radiation readings which initiated the CREFAS were not valid. No measurable activity was detected in the grab sample.

Concurrent with the CREFAS actuation, low flow alarms were received on radiation monitor RU-29. The cause of the spurious CREFAS actuation has been traced to electrical noise generated by an unused pair of contacts on the radiation monitor flow module. Unlike several other contacts in the radiation monitor, the unused contacts did not have any associated surge suppression circuitry.

An investigation has demonstrated that when the unused contacts cycle, a "chatter" results. This "chatter" has been demonstrated to feed back to the monitor power supply ground system, resulting in voltage spiking. As a result of the power supply voltage spiking, the monitor indicated erroneously high radiation reading spikes coincident with the contact induced voltage spikes. These spikes, if of sufficient magnitude and frequency, can spuriously initiate a CREFAS.

As a corrective action, permanent hardware changes have been made to the Unit 2 control room ventilation intake noble gas radiation monitors to prevent the unused flow contacts from causing further spurious ESF actuations. A similar change is being investigated for the corresponding radiation monitors in Units 1 and 3.

A similar event occurred in Unit 2 on December 18, 1985. This event was described in LER 85-004-00. Unit 1 has experienced several spurious CREFAS actuations. However, none of these spurious ESF actuations can be attributed to contact "chatter" induced power supply voltage spiking.

Prior to the CREFAS initiation, the Train "B" control room emergency ventilation system (VI) had been placed in the recirculation mode, as required by Technical Specifications, because of the inoperable status of Train "A," and Train "B" CREFAS. Train "B" CREFAS was inoperable as a result of the Train "B" control room ventilation intake noble gas monitor (RU-30) being in BYPASS. Train "A" CREFAS was inoperable because the Train "A" ESF Load Sequencer (JE) had not yet been response time tested.

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APPROVED OMB NO. 3150-0104

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

No adverse effect on the safe operation of the plant resulted from this event. Further, had high radiation levels existed outside of the control building prior to the event, operation of the Train "B" control room emergency ventilation system in the recirculation mode would have ensured continued safe operation of the plant.

With the exception of the spurious radiation monitor initiation of a CREFAS actuation, all ESF and safety-related components performed as required.



## Arizona Nuclear Power Project

P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

January 17, 1986  
ANPP-34679-EEVB/KLM/98.07

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

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 2  
Docket No. STN 50-529, License No. NPF-46  
Licensee Event Report - 85-001-00  
File: 86-020-404

Dear Sirs:

Attached please find Licensee Event Report (LER) No. 85-001-00 prepared and submitted pursuant to 10 CFR 50.73. 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.*

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

EEVB/KLM/rw  
Attachment

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

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