10CFR50.73

APS
Palo Verde Nuclear Generating Station

A subsidiary of Pinnacle West Capital Corporation

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102-05280-DMS/CKS/REB
May 25, 2005

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, 3
Docket No. STN 50-528, STN 50-529, STN 50-530
License No. NPF-41, NPF-51, NPF-74
Licensee Event Report 2003-004-01

Attached please find Licensee Event Report (LER) Supplement 50-528/2003-004-01 that has been prepared and submitted pursuant to 10 CFR50.73. This LER reports a condition involving cracks in the contact block of handswitches located in the main control room and other miscellaneous plant locations. This supplement provides the root cause of switch failure and the safety assessment of the condition.

In accordance with 10 CFR 50.4, 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.

Sincerely,

DMS/CKS/REB/ca

Attachment

cc: B. S. Mallett — NRC Region IV Regional Administrator (all with attachment)
G. G. Warnick — Senior Resident Inspector
M. B. Fields — NRC NRR Project Manager

IE22

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Palo Verde Nuclear Generating Station Unit 1	05000528	1 OF 4

TITLE (4)

Cracks in contact block of main control room handswitches result in inoperable equipment.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									PVNGS Unit 2	05000529
09	16	2003	2003	– 004	– 01	05	25	05	FACILITY NAME	DOCKET NUMBER
									PVNGS Unit 3	05000530

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)							
POWER LEVEL (10)	97		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)		50.73(a)(2)(i)(B)	X	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)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Daniel G. Marks, Section Leader, Regulatory Affairs	623-393-6492

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU FACTURER	REPORTABLE TO EPIX
B	BP	HS	M302	Y	B	SB	HS	M302	Y

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 5, 2003 a minor crack was discovered in a control switch contact block (Honeywell-Micro Switch model PTCC) in the Unit 3 main control room. Further evaluation was required to determine the transportability of the cracked contact block condition. The inspection of all applicable switches in all three units has been completed with a total of 57 switches, out of 2310 inspections, having unacceptable cracks. No actual switch failure, caused by the cracking condition, has been identified.

The direct cause of this condition was determined to be over-torquing of the termination screws during initial switch installation. The root cause was attributed to the manufacturing process associated with the contact block. All defective Q-Class switches have been replaced in all three units and the remaining defective switches will be replaced. In addition, the applicable maintenance instructions have been revised to caution against over-tightening the termination screws and to verify crack free contact blocks when working on the associated hand switches.

No other similar event has been reported by Palo Verde in the past three years.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTAL NUMBER	REVISION NUMBER	
Palo Verde Nuclear Generating Station Unit 1	05000528	2003	-- 004	-- 01	2 OF 4

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

1. REPORTING REQUIREMENT(S):

This LER 528/2003-004-01 is submitted to update a reported condition involving cracking in the contact block for handswitches (EIIS: HS) used primarily in the main control room at each unit. Specifically, a common cause failure resulted in the inoperability of independent trains of safety related components (10 CFR 50.73 (a) (2) (vii)).

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

The affected handswitches use Honeywell Micro Switch model PTCC contact blocks, which is also part of the PTC line of contact blocks. These switches are used extensively (2310 total switches) on the main control room boards and other various locations to control components in various systems including safety related systems. The current manufacturer of these contact blocks is Senasys, although the affected blocks were manufactured prior to Senasys taking over the product line.

3. INITIAL PLANT CONDITIONS and EVENT DESCRIPTION:

On March 5, 2003 Units 1, 2 and 3 were operating in Mode 1, Power Operation, at approximately 97, 98 and 99 percent rated thermal power respectively. During a maintenance activity in Unit 3 to replace a broken handswitch knob on a main control room handswitch, electrical maintenance personnel noted that the contact block for the switch had a minor crack. The contact block was replaced and a condition report disposition request (CRDR) was initiated to further evaluate the cracked block condition.

As part of the CRDR evaluation, work orders (WO) were initiated to inspect additional handswitches. By August 27, 2003 the result of this additional inspection had identified several switches with a crack located on one of the two rivets that attach the back plate to the contact block. An operability determination (OD) was initiated on August 27, which concluded that a switch remained capable of performing its design function, including during a seismic event, with only one crack on one of the rivets. Inspection of other similar switches continued in an effort to further identify the extent of the cracking condition. On August 29, a switch was found with two cracks, one on each rivet. Engineering determined that this condition also did not prevent the handswitch from performing its design function and the OD was revised to include this condition.

Final inspection results have identified that out of a total of 2310 inspections 57 hand switches had cracks that were unacceptable.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTAL NUMBER	REVISION NUMBER	
Palo Verde Nuclear Generating Station Unit 1	05000528	2003	-- 004	-- 01	3 OF 4

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

There were no inoperable systems at the start of the event that contributed to the event.

4. ASSESSMENT OF SAFETY CONSEQUENCES:

The length of time that the control switches had cracks is not known however, no switch failure caused by the cracking condition has been identified. In the unlikely event that a seismic event were to occur it is possible that an unacceptably cracked switch may not have performed its safety function. The following is a list of degraded switches, by unit, which could have had an adverse impact on plant shutdown following a seismic event.

Unit 1

1JSIAHS0678: control room hand switch for containment spray pump A discharge valve to the shutdown cooling heat exchanger. There is another valve in series with this valve that can be operated from the control room. In addition, SIAHV 0678 could be manually operated. Redundant 100 per cent train B available.

1JSIAHS0685: control room hand switch for low pressure safety injection pump A cross tie valve to the shutdown heat exchanger. This valve could be manually operated. Redundant 100 per cent train B available.

Unit 2

2JSIBHS0613A: control room hand switch for safety injection tank vent valve. Parallel vent valve is available to vent the tank.

Unit 3

3JSIAHS0607A: control room hand switch for safety injection tank vent valve. Parallel vent valve is available to vent the tank.

3JAFBHS0034A and 35A: control room hand switches for valves providing essential auxiliary feedwater to the steam generators from the motor driven essential auxiliary feedwater pump. These valves could be manually operated. Redundant 100 per cent capable train A system available.

3JSIDHS0654: control room hand switch for shutdown cooling loop 2 suction line isolation valve. Redundant 100 per cent capable train A system available.

The identified cracking condition would not have prevented the fulfillment of any safety function and did not result in a safety system functional failure as defined by 10CFR50.73(a)(2)(v).

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTAL NUMBER	REVISION NUMBER	
Palo Verde Nuclear Generating Station Unit 1	05000528	2003	-- 004	-- 01	4 OF 4

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

The event has not resulted in any challenges to the fission product barriers or resulted in the release of radioactive materials. Therefore, there were no adverse safety consequences or implications as a result of this condition.

5. CAUSE OF THE EVENT:

The direct cause of this event was over-torquing the termination screws during initial switch installation in the control board panel. The root cause was attributed to the manufacturing process associated with the contact block which made the block susceptible to cracking.

6. CORRECTIVE ACTIONS:

All unacceptably defective Q-Class hand switch contact blocks have been replaced in all three units. The remaining contact bocks have been scheduled for replacement with 13 in Unit 1. All Unit 2 and Unit 3 switches with cracks have been replaced. In addition, the applicable maintenance instructions have been revised to caution technicians about over-tightening the termination screws and to verify crack free contact blocks when working on the associated hand switches.

7. PREVIOUS SIMILAR EVENTS:

There has been no similar event reported to the NRC by the Palo Verde Nuclear Station in the past three years.

8. ADDITIONAL INFORMATION:

None