



10CFR50.73

Palo Verde Nuclear
Generating Station

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192-01131-GRO/SAB/REB
November 13, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
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 2003-004-00**

Attached please find Licensee Event Report (LER) 50-528/2003-004-00 that has been prepared and submitted pursuant to 10 CFR50.73. This LER reports a condition involving cracks in the contact block of main control room handswitches.

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,

David Mauldin
for G.R. Overbeck

GRO/SAB/REB/kg

Attachment

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

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

Callaway • Comanche Peak • Diablo Canyon • Palo Verde • South Texas Project • Wolf Creek

IE22

LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1)

Palo Verde Nuclear Generating Station Unit 1

DOCKET NUMBER (2)

05000528

PAGE (3)

1 OF 5

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
06	14	2003	2003	004	00	11	13	2003	PVNGS Unit 2	05000529
									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

Daniel G. Marks, Section Leader, Regulatory Affairs

TELEPHONE NUMBER (Include Area Code)

623-393-6492

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	BP	HS	M302	Y	B	SB	HS	M302	Y

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

X	YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	MONTH	DAY	YEAR
X			02	28	2004

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. As of November 10, 2003, 625 switches have been inspected with 12 having unacceptable cracking. There are approximately 2263 total switches between all three units (1338 Q-class switches) potentially affected sitewide. A 100% inspection of the unit 2 switches is underway during the current unit 2 refueling outage. High-risk impact switches in Units 1 and 3 will be inspected on an expedited basis. All of the contact blocks were functional at the time of discovery and all unacceptable contact blocks will be replaced.

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

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FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 1	05000528	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		2003	-- 004	-- 00	

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

1. REPORTING REQUIREMENT(S):

This LER 528/2003-004-00 is submitted to report a condition involving cracking in the contact block for handswitches (EHS: 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 (2263 total switches, including 1338 Q-class handswitches, between all three units) 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, 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.

Further inspections, as of November 10, 2003, have identified that out of a total of 625 handswitches inspected 38 have cracks that are acceptable per the OD and 12 have been found unacceptable. Inspection of handswitches is continuing with the number of switches to be

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

inspected increased in an effort to inspect enough switches to provide a 95 percent confidence that 95 per cent of the handswitches are acceptable. A 100 percent inspection of the switches in Unit 2 is underway during the current refueling outage. The intent is to have the switches inspected and any high-risk impact contact blocks with cracks, even if acceptable per the OD, replaced. A risk ranking is being used to determine the order of switch inspection when appropriate.

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, the switches were functional at the time of discovery. In the unlikely event that a seismic event were to occur it is possible that an unacceptably cracked switch may not perform its safety function. Each of the reported unacceptable switches within the scope of 10 CFR 50.73(a)(2)(vii) is addressed below.

Handswitch 1JSGBHS0221 was determined to be unacceptable on September 16, 2003. This switch controls one of two in line containment isolation valves (EIS: ISV) for the steam generator (EIS: SG) 1 blowdown sample line. Technical Specification (TS) 3.6.3, Containment Isolation, was complied with and the switch was restored to operable status on September 16.

Handswitch 3JAFBHS0034A was determined to be unacceptable on September 17, 2003. This switch controls one of two in line valves that provide a flow path for auxiliary feedwater (EIS: BA) to steam generator 1. Three TS actions were entered and complied with: TS 3.6.3, Containment Isolation; TS 3.7.5, Auxiliary Feedwater System, and TS 3.3.11, Remote Shutdown System. The switch was restored on September 17.

Handswitch 1JSIAHS0678 was determined to be unacceptable on September 23, 2003. This switch controls a valve used to isolate the containment spray (EIS: BE) header when placing shutdown cooling in service. Since the unit was in Mode 1, Power Operation, at the time of discovery no TS action was required. Technical Requirements Manual (TRM) section T3.5.201, Shutdown Cooling System (EIS: BP), was complied with (required restoration within 7 days). The switch was restored on September 23.

Handswitches 2JSGAHS0204 and 2JSGBHS0222 were determined to be unacceptable on October 24, 2003. Each of these switches control one of two in line containment isolation valves for separate steam generator blowdown sample lines.

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Handswitch 2EPBAHSS03L was determined to be unacceptable on October 31, 2003. This switch controls the (1E 4160 volt) supply power breaker (EIS: EB, BRK) to the PBA-S03 train "A" switchgear. The switch was restored on November 5, 2003. No LCO entries were required for this switch, as Unit 2 was in Mode 6 and defueled and the necessary portion of the "B" train electrical power distribution subsystems were OPERABLE.

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). The final safety significance will be completed after the scope of the cracking problem is better identified.

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 and the condition did not adversely affect the safe operation of the plant or health and safety of the public.

5. CAUSE OF THE EVENT:

The root cause of the condition is under investigation. However, preliminary indications are that the cause of the condition is either a manufacturing or age-related issue.

6. CORRECTIVE ACTIONS:

The handswitch contact blocks have been and will be replaced as required. Any further corrective action will be determined by the root cause investigation.

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:

In addition to the reportable degraded switches identified in section 4.0, the following switches were identified with unacceptable cracking.

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Handswitch 3JSIBHS0632. This switch controls one of two in line nitrogen supply valves to safety injection tank 1A. The function of the valves is to supply nitrogen cover gas to the safety injection tank.

Handswitch 2JSIBHS0613A. This switch controls one of two parallel valves used to vent safety injection tank 2A. The valve normally has powered removed when the plant is in Modes 1, 2, and Modes 3, 4 when RCS pressure is greater than or equal to 1837 psia.

Handswitch 2JEWHS0065. This switch controls a valve used in the essential cooling water system to cross tie cooling water to the non-class nuclear cooling water system.

Handswitch 2JCHNHS0511. This switch controls a valve that provides a recirculation path for reactor makeup water.

Handswitch 2JFTNHS0099. This switch controls the transfer between automatic and manual control for main feedwater pump A.

Handswitch 2ENBNSSS01C. This switch controls indication and interlocks for synchronization of the non-class 1E bus-tie circuit breaker.