



10 CFR 50.73

A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear
Generating Station

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102-05495-CE/CKS/DLK
May 18, 2006

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

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528
License No. NPF 41
Licensee Event Report 2006-001-00**

Attached please find Licensee Event Report (LER) 50-528/2006-001-00 prepared and submitted pursuant to 10 CFR 50.73. This LER reports conditions prohibited by Technical Specifications where Unit 1 operated the reactor coolant system with pressurizer pressure above 385 pounds per square inch absolute (psia) in Mode 4 without both trains of Containment Spray Operable (two events).

In accordance with 10 CFR 50.73(d), copies of this LER are being forwarded to the NRC Regional Office, NRC Region IV and the PVNGS 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,

CE/CKS/DLK/gt

Attachment

cc: B. S. Mallett NRC Region IV Regional Administrator
M. B. Fields NRC NRR Project Manager - (send electronic and paper)
G. G. Warnick NRC Senior Resident Inspector for PVNGS

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 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 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 Unit 1	2. DOCKET NUMBER 05000528	3. PAGE 1 OF 6
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4. TITLE
Containment Spray Inoperable in Mode 4 with RCS Pressure greater than 385 psia

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
03	20	2006	2006	- 001 -	00	05	18	2006	None	05000
									FACILITY NAME	DOCKET NUMBER
									None	05000

9. OPERATING MODE 4	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: <i>(Check all that apply)</i>																																				
10. POWER LEVEL 0	<table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> 20.2201(b)</td> <td><input type="checkbox"/> 20.2203(a)(3)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(I)(C)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)</td> </tr> <tr> <td><input type="checkbox"/> 20.2201(d)</td> <td><input type="checkbox"/> 20.2203(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(II)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(1)</td> <td><input type="checkbox"/> 20.2203(a)(4)</td> <td><input type="checkbox"/> 50.73(a)(2)(II)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(I)</td> <td><input type="checkbox"/> 50.36(c)(1)(I)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(III)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(II)</td> <td><input type="checkbox"/> 50.36(c)(1)(II)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(IV)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(x)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(III)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(V)(A)</td> <td><input type="checkbox"/> 73.71(a)(4)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(IV)</td> <td><input type="checkbox"/> 50.46(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(V)(B)</td> <td><input type="checkbox"/> 73.71(a)(5)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(V)</td> <td><input type="checkbox"/> 50.73(a)(2)(I)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(V)(C)</td> <td><input type="checkbox"/> OTHER</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(VI)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(I)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(V)(D)</td> <td style="font-size: small;">Specify in Abstract below or in NRC Form 366A</td> </tr> </table>	<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)(vii)(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 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 checked="" 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
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12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME James A. Proctor, Section Leader, Regulatory Affairs	TELEPHONE NUMBER (include Area Code) (623) 393-5730
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

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

All times in this report are approximate and Mountain Standard Time unless noted otherwise.

On March 20, 2006 at 1530, while in the process of a reactor startup, Unit 1 was in Mode 4 (Hot Shutdown) with pressurizer pressure greater than 385 pounds per square inch absolute (psia) when Control Room personnel realized that "B" train Containment Spray (CS) had not been Operable on two occasions when it was required to be Operable. Technical Specification (TS) 3.6.6 requires both trains of CS to be Operable in Mode 4 when pressurizer pressure is greater than 385 psia. On March 20, 2006 at 0445 and at 0905 Unit 1 entered Mode 4 with pressurizer pressure greater than 385 psia with only the "A" train of CS Operable in violation of TS 3.0.4.

At 1915 on March 20, Control Room personnel initiated cool down of the Reactor Coolant System (RCS) to return to Mode 4 operation with pressurizer pressure less than 385 psia. At 2030, while still in the process of cooling down, "B" train CS was returned to Operable status and Control Room personnel exited Limiting Condition for Operation 3.6.6.

The cause of the event was human error.

In the past three years, Palo Verde reported four violations of TS 3.0.4 on separate Licensee Event Reports.

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

All times in this report are approximate and Mountain Standard Time unless noted otherwise.

1. REPORTING REQUIREMENT(S):

This Licensee Event Report (LER) (50-528/2006-001-00) is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B), to report conditions prohibited by Technical Specifications. The first reportable event occurred on March 20, 2006 at 0445 when Control Room personnel (utility, licensed) completed a Mode change from Mode 5 (Cold Shutdown) to Mode 4 (Hot Shutdown) with only the "A" train of Containment Spray (CS) (EIS: BE) Operable and pressurizer (EIS: PZR) pressure at 386 pounds per square inch absolute (psia). Technical Specification 3.6.6 requires two CS trains to be Operable in Mode 4 when pressurizer pressure is greater than or equal to 385 psia. Contrary to Technical Specification 3.0.4, a Mode change was completed without meeting the LCO for Technical Specification 3.6.6. Again on March 20, 2006 at 0905 Control Room personnel (utility, licensed) raised pressurizer pressure above 385 psia with only "A" train CS Operable. Contrary to Technical Specification 3.0.4, a specified condition was entered without meeting the Limiting Condition for Operation (LCO) for Technical Specification 3.6.6. Both events were conditions prohibited by Technical Specifications and reportable under 10 CFR 50.73(a)(2)(i)(B).

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

The CS System provides containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. The CS System is an Engineered Safety Feature System designed to ensure that the heat removal capability required during the post accident period can be attained. The CS System consists of two separate trains of equal capacity, each capable of meeting the design bases. Each train includes a containment spray pump (EIS: P), a shutdown cooling heat exchanger (EIS: HX), spray headers (EIS: PSF), nozzles (EIS: NZL), valves (EIS: V), and piping (EIS: PSP). Each train is powered from a separate ESF bus (EIS: EB). The Refueling Water Tank (RWT) (EIS: BQ) supplies borated water to the containment spray system during the injection phase of operation. In the recirculation mode of operation, containment spray pump suction is transferred from the RWT to the containment sump(s).

3. INITIAL PLANT CONDITIONS:

On March 20, 2006 at 0445 Palo Verde Unit 1 was in the process of changing Modes

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from Mode 5 to Mode 4, with pressurizer pressure at approximately 386 psia. At the start of the first event, valve SIBHV0689 (Containment Spray to Shutdown Cooling Heat Exchanger Isolation Valve) (EIS: BE, V) was closed in support of train "B" shutdown cooling operations, which made CS train "B" inoperable. SIBHV0689 was also closed at the start of the second event. No other major structures, systems, or components were inoperable that contributed to these events.

4. EVENT DESCRIPTION:

On March 20, 2006 Palo Verde Unit 1 night shift Control Room personnel (utility, licensed) were preparing to return to power operation following a short notice outage (SNO). Shutdown Cooling (EIS: BP) operation was lined up to the "B" train. The Reactor Operator (RO) was maintaining pressurizer pressure between 345 psia and 415 psia. The Control Room Supervisor (CRS) was unaware of the pressure parameters within which the RO was operating. At the time, the RO did not recognize the need to maintain pressure below 385 psia. At 0445, with pressurizer pressure at 386 psia and CS "B" inoperable, Control Room personnel changed Modes from Mode 5 to Mode 4. (During "B" train shutdown cooling operation, SIBHV0689 is closed rendering CS inoperable.) Unaware that any Technical Specifications were violated, Control Room personnel continued with preparations to return to power operations throughout the remainder of the night shift. At approximately 0630, the night shift turned over Unit 1 operation to the oncoming day shift.

At approximately 0645 that same day, Control Room personnel lowered pressurizer pressure below 385 psia. Pressurizer pressure was maintained below 385 psia until the controlling procedure (40OP-9ZZ24, "SNO Outage") indicated that pressure could be raised. The CRS reviewed the control board CS lineup and the control room logs and questioned the Shift Technical Advisor to verify both trains of CS were operable. The CRS did not consult with the Shift Manager or any other licensed operators regarding the operational status of the CS system. Believing (incorrectly) that both trains of CS were Operable, the CRS directed Reactor Coolant System (RCS) (EIS: AB) pressure be raised. At 0905, pressurizer pressure was raised above 385 psia. Unaware that any Technical Specifications were violated, Control Room personnel continued with preparations to return to power operations. At 1500, Control Room personnel declared CS "B" inoperable in support of 40OP-9SI02 (Recovery from Shutdown Cooling to Normal Operating Lineup). At approximately 1530 Control Room personnel were reviewing a section of 40ST-9SI13 (LPSI and CS System Alignment Verification) and realized that CS train "B" had not been Operable and violations of Technical Specifications 3.6.6 and 3.0.4 had occurred. At about 1630, Operations Management directed RCS pressure to be lowered to restore compliance with LCO 3.6.6. At 1915 Control Room personnel initiated depressurization of the RCS and pressurizer

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cooldown. At 2030, upon completion of 40ST-9SI13, Control Room personnel returned the "B" train CS pump to service and exited TS LCO 3.6.6. With both trains of CS Operable and in compliance with TS LCO 3.6.6 Control Room personnel secured the RCS cooldown and depressurization.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

The condition did not result in any challenges to the fission product barriers or result 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.

The "A" train CS was available throughout the event and capable of performing the same functions. The condition would not have prevented the fulfillment of the safety function and did not result in a safety system functional failure as defined by 10CFR50.73(a)(2)(v).

The condition did not result in a transient more severe than those analyzed in the Updated Final Safety Evaluation Report Chapters 6 and 15. The condition did not have any nuclear safety consequences, or personnel safety impact.

6. CAUSE OF THE EVENT:

The root cause of both events was attributed to human error in that operational fundamentals were not consistently applied for controlling and monitoring plant parameters to ensure compliance with license conditions.

The two following contributing causes were also identified:

The quality of routine operational tasks that support monitoring and controlling plant parameters is not always maintained during periods of high activity.

Procedure 40OP-9ZZ11 (Mode Change Checklist) is not human factored to clearly distinguish the requirement to remain below 385 psia until both trains of CS can be determined to be Operable.

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7. CORRECTIVE ACTIONS:

A significant investigation was conducted and resulted in the following actions.

Operation's personnel directly involved with both occurrences were relieved of shift duties and a remediation plan was completed.

The following actions have been entered into the Palo Verde Corrective Action Program:

Operations Management will reinforce Operations Fundamentals as described in Institute of Nuclear Power Operations Significant Event Report 3-05, Weaknesses in Operator Fundamentals. Actions will include both individual task and crew performance observations while on shift and in training settings. The intent of this action is to improve individual and team performance in the monitoring and control of the power plant.

Procedure 40OP-9ZZ11, Mode Change Checklist, format will be revised to clearly delineate the requirements necessary to satisfy Technical Specification requirements prior to exceeding RCS pressure of 385 psia.

8. PREVIOUS SIMILAR EVENTS:

In the past three years, four LERs were submitted to report violations of Technical Specifications 3.0.4.

LER 529/2003-004 reported a condition in Unit 2 in which a Mode change occurred with one Auxiliary Feed Water pump inoperable. The cause of this event was attributed to an inadequate understanding of surveillance testing requirements by Engineering and Operations personnel.

LER 528/2004-002 reported a condition in which power was increased above 20 percent with axial shape index outside TS limits. The cause of this event was attributed to an inadequate understanding of TS 3.2.5 by the involved Operations personnel.

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LER 529/2005-002 reported a condition in which a Mode change occurred with one of two required Low Pressure Safety Injection (LPSI) trains being inoperable due to a degraded mechanical pump seal. The cause of this event was attributed to an equipment problem.

LER 528/2005-002 reported a condition in which a Mode change occurred with a safety injection valve out of position. The cause of the event was attributed to cognitive personnel error.

The causes for these previously reported events were different than the root cause of the event discussed in this LER. As such, the corrective actions taken as a result of these previously reported events would not have prevented the event discussed in this LER.

This LER (50-528/2006-001-00) is related to the violation of Technical Specification 3.0.4 reported in LER 50-528/2006-002-00 in that the events described in both LERs had the same root cause and occurred during the same Unit 1 start up.