APS

A subsidiary of Pinnacle West Capital Corporation

10CFR50.73

Palo Verde Nuclear Generating Station

Cliff Eubanks
Vice President
Nuclear Operations

Tel (623) 393-6116
Fax (623) 393-6077

Mail Station 7602
PO Box 52034
Phoenix, Arizona 85072-2034

102-05571-CE/SAB/DLK
September 21, 2006

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)
Unit 1
Docket No. STN 50-528
License No. NPF-41
Licensee Event Report 2003-001-01

Attached please find supplemental Licensee Event Report (LER) 50-528/2003-001-01 prepared and submitted pursuant to 10CFR50.73. The original LER reported the findings and corrective actions taken in response to a single, out of tolerance pressurizer safety valve which was discovered during post outage testing. This LER supplement contains updated information related to the cause of the event and corrective actions.

In accordance with 10CFR50.4, a copy of this LER is being forwarded to the NRC Region IV Office and the Resident Inspector. Substantive revisions to the LER are identified by side bars in the left hand margin. 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/SAB/DLK/gt

Attachment

cc: B. S. Mallet, Region IV Administrator (all with attachment)
G. G. Warnick, Sr. Resident Inspector
M. B. Fields, PVNGS Project Manager

IE22

NRC FORM 366 (7-2001)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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)

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4. TITLE

Pressurizer Safety Valve As-Found Lift Pressure Outside of Technical Specification Limits

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
										05000
03	05	2003	2003	– 001	– 01	09	21	2006	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	1
10. POWER LEVEL	98

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	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)	xx	50.73(a)(2)(i)(B)		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)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
James A. Proctor, Section Leader, Regulatory Affairs	623-393-5730

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
X	AB	RV	D245	N					

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

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

On March 5, 2003, lift pressure verification testing was completed on four pressurizer safety valves (PSVs) that had been removed during the Unit 1 tenth refueling outage. The testing revealed that the as-found lift pressure for one of the four PSVs was found to be outside the Technical Specification limit of +3/-1 percent of design lift pressure.

The valve design uses a spring to maintain the required lift pressure. The as-found PSV condition appears to be the result of a degraded spring. The equipment root cause failure analysis found that the valve spring did not meet the valve vendor's inspection criteria for squareness. The impact of the Unit 1 PSV out-of-tolerance was evaluated and it was determined the results, based on the as-found conditions, were bounded by the peak Reactor Coolant System pressure results of the current Loss of Condenser Vacuum analysis of record. Loss of Condenser Vacuum is the most limiting event for peak primary pressure that is impacted by a PSV high out-of-tolerance condition.

Previous similar events have been reported in the last three years.

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

1. REPORTING REQUIREMENT(S):

Surveillance testing of the Unit 1 Pressurizer Safety Valves (PSVs) (EIIS: RV, AB) was completed on March 5, 2003 and the as-found lift pressure for one of the four PSVs was found to be outside Technical Specification (TS) 3.4.10 limit of +3/-1 percent of design lift pressure.

This LER is being submitted because it is reasonable to assume that the out-of-tolerance condition existed prior to discovery and may have exceeded TS required action completion times. Therefore, the condition is reportable under 10 CFR 50.73(a)(2)(i)(B).

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

The PSVs were manufactured by Dresser/Consolidated and are Consolidated 31700 series valves designed for nuclear service and certified under Section III, Class 1, of the ASME code for application in nuclear power systems. The PSVs are crossed bonnet maxiflow, spring loaded, direct acting, model no. 31709NA valves. The function of the PSVs is to limit reactor coolant system (EIIS: AB) pressure to less than or equal to the TS 2.1.2 safety limit pressure of 2750 pounds per square inch absolute (psia) for moderate and low frequency events, and to less than 3000 psia for certain very low frequency events.

The PSVs are tested in accordance with TS Surveillance Requirements (SR) 3.4.10.1 and SR 3.4.11.1, the inservice testing program (IST), and the ASME Code. Although testing of these valves is required on a five-year frequency, Arizona Public Service Company (APS) tests the PSVs on a refueling (18-month) basis in accordance with previously determined corrective actions. The TS Bases for 3.4.10 requires as-found PSV lift settings to be within +3/-1 percent of the design lift pressure of 2475 psia. (2460 pounds per square inch gauge (psig)).

APS replaces PSVs during refueling outages with rebuilt and tested PSVs from APS inventory. PSVs removed during outages are as-found lift tested, disassembled, inspected, reassembled, and certified at NWS Technologies Laboratories.

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

There were no unusual characteristics of the work location (e.g., noise, heat, poor lighting) that contributed to this condition. Other than the PSV degradation described in this LER, there were no other component or system failures. There were no failures that rendered a train of a safety system inoperable and there were no personnel or procedural errors identified.

3. INITIAL PLANT CONDITIONS:

The Unit 1 PSV testing was completed at NWS Technologies Laboratories on March 5, 2003. During this period, Unit 1 was in Mode 1 (Power Operation) at approximately 98 percent power.

There were no major structures, systems, or components that were inoperable at the start of the event that contributed to the event.

4. EVENT DESCRIPTION:

On March 5, 2003 set pressure verification testing was completed on the PSVs that had been removed during the Unit 1 tenth refueling outage. The set pressure verification testing conducted at the NWS Technologies Laboratories, revealed that the as-found lift pressure for one of the four PSVs was outside the TS limits of +3/-1 percent of design lift pressure.

The as-found lift pressure for PSV JRCEPSV0202 (s/n # BS-08592) was 2550 psig or 3.7 percent above the design lift pressure of 2460 psig. The as-found lift settings for the other three PSVs were within the TS limit of +3/-1 percent of design lift pressure.

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

5. ASSESSMENT OF SAFETY CONSEQUENCES:

The out-of-tolerance as-found PSV condition appears to be the result of a degraded spring. The impact of the PSV out-of-tolerance was evaluated and it was determined the results, based on the as-found conditions, were bounded by the peak RCS pressure results of the current Loss of Condenser Vacuum analysis of record (A-PV2-FE-0160, Rev 2). Loss of Condenser Vacuum is the most limiting event for peak Primary pressure that is impacted by a PSV high out-of-tolerance condition. The safety function of the PSVs would have been met and this condition is therefore not reportable under 10CFR50.73(a)(2)(v).

6. CAUSE OF THE EVENT:

Based on the equipment root cause failure analysis, the most probable cause for the as-found testing to be out-of-specification was a degraded valve spring. This was demonstrated by the testing that was performed following the spring replacement. Two investigation methods were used to achieve this conclusion - change analysis and failure modes and effects. The PSV valve spring did not meet the vendor's established inspection criteria for squareness. Prior to August 2001 the vendor specified criteria for spring inspection only addressed free length. The vendor now specifies criterion for three critical aspects of the spring - free height, parallelism (variance of free height); and squareness (or vertical variation).

7. CORRECTIVE ACTIONS:

All four PSVs were removed during the tenth refueling outage and replaced with rebuilt and tested PSVs from APS inventory.

The four PSVs removed during the tenth refueling outage were as-found lift tested, disassembled, inspected, reassembled and certified at the NWS Technologies Laboratories. No other discrepancies were noted during the disassembly and inspection of the PSVs. The out-of-tolerance spring for S/N BS-08592 was replaced with a new spring prior to recertification testing.

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

Current vendor spring inspection criteria have been incorporated in the applicable procedures used at NWS Technologies Laboratories and the applicable maintenance procedures at PVNGS. (Note that the onsite maintenance staff at PVNGS does not typically use these maintenance procedures because all PSVs are re-built off-site. These procedures were revised to preserve the appropriate inspection criteria.)

8 PREVIOUS SIMILAR EVENTS:

Similar out-of-tolerance PSV conditions were reported in previously submitted LERs 529/1999-004 and 529/2000-008, where setpoint drift was determined to be the cause. In this instance, the out-of-tolerance condition appears to be the result of spring degradation. Although previous corrective actions have been effective in reducing the number of out-of-tolerance PSVs, as-found out-of-tolerance conditions periodically occur. APS evaluates industry operating experience for corrective actions that may improve PSV performance and APS may implement additional actions if they are demonstrated to be effective.