



Palo Verde Nuclear
Generating Station

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192-01072-WEI/AKK/RAS
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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 2
Docket No. STN 50-529
License No. NPF-51
Licensee Event Report 2000-002-00**

Attached please find Licensee Event Report (LER) 50-529/2000-002-00 which has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports the findings and corrective actions taken as a result of the Unit 2 out of tolerance main steam safety valve (MSSV) condition which was discovered during post trip testing.

The Unit 2 MSSV as-found lift pressures were in some cases less than the tolerance allowed by Technical Specification Limiting Condition for Operation 3.7.1. APS engineering has implemented an augmented testing program to identify and reset MSSVs after lifts occur to preclude plant operation with low MSSV setpoints.

The corrective actions taken as a result of the out-of-tolerance MSSVs and the augmented testing plan described herein are being controlled in accordance with the PVNGS corrective action program. As such, APS may modify these corrective actions as necessary to improve MSSV reliability and performance. No commitments are made to the NRC in this letter.

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Licensee Event Report 50-529/2000-002-00
Page 2

In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, 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.

Sincerely,



WEI/DGM/RAS/kg

Attachment

cc: E. W. Merschoff (all with attachment)
J. H. Moorman
M. B. Fields
INPO Records Center

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 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1) Palo Verde Nuclear Generating Station (PVNGS) Unit 2	DOCKET NUMBER (2) 05000529	PAGE (3) 1 OF 6
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TITLE (4)
Main Steam Safety Valve Lift Pressures Outside of Technical Specification Limits

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 NAME	DOCKET NUMBER
08	29	2000	2000	002	00	09	27	2000	N/A	
									FACILITY NAME	DOCKET NUMBER
									N/A	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 100	20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)			
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)			
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71			
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER			
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)					
	20.2203(a)(2)(iv)		50.36(c)(2)	X	50.73(a)(2)(vii)					Specify in Abstract below or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME Daniel G. Marks, Section Leader, Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) 623-393-6492
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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
X	SB	RV	D243	Y					

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

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

On August 29, 2000, after a Unit 2 plant trip (LER 50-529/2000-02-00), lift pressure verification testing was completed on the main steam safety valves (MSSVs) per the PVNGS corrective action program. The testing revealed that as-found lift pressures for five of the twenty Unit 2 MSSVs were below the Technical Specification limits of +/- 3 percent of design lift pressure. The five MSSVs are assumed to have drifted out-of-tolerance after the MSSVs lifted during a plant trip and the completion time for technical specification limiting condition for operation (LCO) 3.7.1 B.2 was not met.

APS engineering has determined that a low out of tolerance condition may occur after MSSVs lift and has implemented corrective actions to reset MSSVs after lifts occur to preclude plant operation with low MSSV setpoints.

Previous similar events have been reported in LERs 50-529/1999-002, 50-530/1998-003, 50-528/1998-004, 50-529/1997-001, and 50-530/1997-003.

U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT (LER)
 TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 6
		2000	- 002	- 00	

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

1. REPORTING REQUIREMENT(S):

During the post-trip testing of the Unit 2 main steam safety valves (MSSVs) (EISS: RV, SB) which was completed on August 29, 2000, as-found lift pressures for five of the twenty Unit 2 MSSVs were found to be below the Technical Specification limit.

This LER is being submitted because it is reasonable to assume a condition existed in excess of Technical Specification (TS) completion times. Specifically, during testing which occurred between August 27 and August 29, 2000, five MSSVs were identified as having as-found setpoints outside of the technical specification limit of +/- 3 percent of design set pressure. Upon engineering evaluation of the MSSV as-found testing results, it was determined that it is reasonable to assume the drift condition occurred on August 26, 2000 at 1539 MST, after the valves lifted during a plant trip. Although the minimum number of operable MSSVs was maintained during the testing period, if it is assumed the five MSSVs drifted out of tolerance on August 26, 2000 at 1539, then limiting condition for operation (LCO) 3.7.1 action A.2 to reduce the variable overpower trip setpoint should have been completed within 12 hours or LCO 3.7.1 action B.2, which requires the plant to be in Mode 4 should have been completed by August 27, 2000 at 1539 MST. Since the condition was not known until testing had been completed, neither of these actions were taken and therefore, this condition is reportable under 10 CFR 50.73(a)(2)(i)(B) "Any operation or condition prohibited by the plant's Technical Specifications."

In addition, this LER is being submitted pursuant to 10 CFR 50.73 (a)(2)(vii) because it is reasonable to assume that a single cause or mechanism served as a common input to the multiple MSSV out-of-tolerance conditions in a single system designed to mitigate the consequences of an accident.

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

The MSSVs are Dresser/Consolidated 3700 series valves designed for nuclear service and certified under Section III, class 2, of the ASME Code. Palo Verde's specific valves are Maxiflow, spring-loaded, direct acting, model No. 3707-R with 6 inch 1500 pound inlet and a 10 inch 300 pound outlet. Five MSSVs are located on each of the four main steam lines, outside containment (EISS: NH), upstream of the main steam isolation valves (EISS: ISV, SB). The total relieving capacity of the MSSVs is divided equally between the main steam lines and is sufficient to pass the steam flow equivalent to 105 percent of the plant's maximum steam flow. The MSSV design includes staggered setpoints so that only the number of valves needed will actuate. The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary

**U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 6
		2000	- 002	- 00	

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

(EIIS: AB) by providing a heat sink for the removal of energy from the reactor coolant system (EIIS: AB) if the preferred heat sink, provided by the condenser (EIIS: SG) and circulating water system (EIIS: KI, KE) is not available.

MSSVs are required to be tested once per five years by Technical Specification (TS) Surveillance Requirement (SR) 3.7.1.1 and the ASME Code requirements, however, Palo Verde tests the valves prior to each refueling outage in accordance with previously specified corrective actions. In addition, APS is currently testing MSSVs that have experienced actual lifts because there is some likelihood that the valves may have drifted to a lower setpoint. When MSSVs testing is performed, approved procedures are used and the valves are tested under normal operating pressure and temperature conditions.

3. INITIAL PLANT CONDITIONS:

MSSV lift testing occurred between August 27, and August 29, 2000, while Unit 2 transitioned from Mode 3 (HOT STANDBY) to Mode 1 (POWER OPERATION) following a plant trip on August 26, 2000 (reference: LER 50-529/2000-001). During the August 26, 2000 plant trip, eleven MSSVs lifted to relieve secondary pressure after an unexpected closure of the MSIVs caused a rapid decrease in heat removal and consequent increase in secondary pressure.

There were no structures, systems, or components that were inoperable that contributed to this condition. There were no failures that rendered a train of a safety system inoperable and no failures of components with multiple functions were involved.

4. EVENT DESCRIPTION:

On August 26, 2000 at 1539 MST, Unit 2 experienced a plant trip. On August 27, 2000, Unit 2 was in Mode 3 (HOT STANDBY) when set pressure verification testing was commenced on the Unit 2 MSSVs using the Furmanite Digital Trevitest method. The MSSV testing was implemented because engineering personnel (utility, non-licensed) had data suggesting that the lift setpoints for some of the MSSVs which experienced an actual lift may have drifted low.

Based on this data, engineering personnel tested the eleven MSSVs that lifted during the Unit 2 plant trip to preclude plant operation with low MSSV setpoints. Of the eleven MSSVs tested, five had as-found setpoints less than the technical specification limit of +/- 3 percent of design lift pressure. The other six MSSVs had as-found setpoints within the technical specification limit.

U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT (LER)
 TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 6
		2000	- 002	- 00	

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

Operations personnel, alert to the technical specification requirement to have six MSSVs operable per steam generator, maintained the plant in Mode 3 until sufficient testing of the lifted MSSVs had been completed to assure that six MSSVs per steam generator were within technical specification limits. However, the technical specification requirement to reduce the variable overpower trip setpoint was not met.

The as-found set pressure for PSV0574 was 1250 pounds per square inch gauge (psig) or -4.9 percent of the design setpoint. The as-found set pressure for PSV0576 was 1240 psig or -5.7 percent of the design setpoint. The as-found set pressure for PSV0578 was 1189 psig or -7.8 percent of the design setpoint. The as-found set pressure for PSV0579 was 1201 psig or -3.9 percent of the design setpoint. The as-found set pressure for PSV0560 was 1249 psig or -3.2 percent of the design setpoint.

5. SAFETY CONSEQUENCES:

An analysis of the safety consequences of the Unit 2 post-trip as-found MSSV testing results is being conducted in accordance with PVNGS procedures. The analysis will consider the effects of the low as-found setpoint MSSVs for the limited time they were out of tolerance.

The cumulative effect of the MSSV as-found results is that the overpressure protection limits for the secondary system would not have been exceeded under accident conditions. In addition, the safety analysis will consider the possibility of excess or premature steam demand events which involve lifting the MSSVs. If the final results of the safety consequences analysis demonstrates the low MSSV setpoint condition could adversely affect the safety analysis, APS will provide the results in a supplement to this LER.

6. CAUSE OF THE EVENT:

An investigation of this event is being conducted in accordance with the APS corrective action program and additional investigative activities remain to be completed before the cause of the condition can be conclusively established. Engineering data suggests the low drift condition may occur for at least some portion of the population of valves which have lifted to relieve secondary pressure. However, this data is preliminary and APS is continuing to study the effect of a variety of factors influencing MSSV behavior.

The cause of the noncompliance with the technical specification required action was that the need to reduce the variable overpower setpoint was not recognizable until MSSV testing has been completed.

**U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
		2000	- 002	- 00	

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

That is, as MSSVs are individually tested, entries into technical specification LCO 3.7.1.A.1 (reduce power within 4 hours) are made and exited from within the allowed completion time, thereby complying with required action A.1 and negating the need to further comply with LCO 3.7.1.A. 2 (to reduce variable overpower trip setpoint within 12 hours). It is only after MSSVs testing has been completed (an evolution that can take several days) and engineering has evaluated the condition, that a determination can be made as to when the drift condition may have occurred and whether a potential noncompliance with the technical specification action requirement occurred.

If APS develops substantial information that would significantly change a reader's perception of the course or consequences of this condition or substantial changes in the planned corrective actions, a supplement to this LER will be submitted.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event. No personnel or procedures errors contributed to this event.

7. CORRECTIVE ACTIONS:

(Immediate Corrective Actions)

Unit 2 MSSVs (PSV-574, PSV-576, PSV-578, PSV-579 and PSV-560) discovered to have low as-found lift pressures outside of the technical specification limit during the post-trip testing were adjusted and retested in accordance with procedure and were returned to service.

(Actions to Prevent Recurrence)

APS engineering has implemented an augmented testing program to test and if necessary, reset MSSVs after lifts occur to preclude plant operation with low MSSV setpoints.

APS is evaluating a procedure change that would prompt the resetting of the variable overpower setpoint after MSSVs have lifted.

8. PREVIOUS SIMILAR EVENTS:

Previous similar events have been reported in LERs 50-529/99-002, 50-530/98-003; 50-528/98-004; 50-529/97-001 and 50-530/97-003. Previous corrective actions taken to reduce setpoint drift conditions have improved as-found test results, however, as-found out of tolerance

**U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Palo Verde Nuclear Generating Station Unit 2	05000529	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	6 OF 6
		2000 - 002 - 00			

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

conditions continue to occur. Previous corrective actions included controls to limit the time refurbished/recertified MSSVs are stored in the PVNGS Warehouse, an increase in testing frequency from five years to 18 months, and setpoint verifications following MSSV lifts.