



Palo Verde Nuclear  
Generating Station

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**10CFR50.73**  
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192-01098-WEI/SAB/DLK  
December 28, 2001

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 3**  
**Docket No. STN 50-530**  
**License No. NPF-74**  
**Licensee Event Report 2001-002-00**

Attached please find Licensee Event Report (LER) 50-530/2001-002 -00 that has been prepared and submitted pursuant to 10CFR50.73. This LER reports a condition prohibited by Technical Specifications where, on two occasions, Unit 3 entered Mode 3 operations with one Auxiliary Feed Water pump inoperable.

In accordance with 10CFR50.4, 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,

*Terry L. Radtke*  
*For Bill Ide*

WEI/SAB/DLK/kg

Attachment

cc: E. W. Merschoff (all with attachment)  
J. H. Moorman  
L. R. Wharton

*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, NEOF-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.

1. FACILITY NAME Palo Verde Nuclear Generating Station Unit 3						2. DOCKET NUMBER 05000530			3. PAGE 1 OF 5		
4. TITLE Unit 3 Mode 3 Entry With An Auxiliary Feed Water Pump Inoperable											
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
10	29	2001	2001	002	00	12	28	2001	FACILITY NAME		DOCKET NUMBER
9. OPERATING Mode		3	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)								
10. POWER LEVEL		0	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)		X	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 Daniel G. Marks, Section Leader, Regulatory Affairs						TELEPHONE NUMBER (Include Area Code) 623-393-6492					
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						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 October 29, 2001 at 1515 MST and again on November 2, 2001 at 0528 MST Unit 3 control room personnel entered Mode 3 with the steam driven Auxiliary Feed Water (AFW) pump inoperable. Unit 3 was being returned to service following a refueling outage. Maintenance had been performed on both the steam driven AFW pump and the associated steam supply valves during the outage. Control room personnel incorrectly interpreted a provisional note in TSLCO 3.7.5 that allows Mode 3 operation with the steam driven AFW pump inoperable and proceeded with the mode change to Mode 3 on two separate occasions in violation of TSLCO 3.0.4. The steam supply valves were tagged closed and deenergized to comply with containment isolation requirements of Technical Specification Limiting Condition for Operation (TSLCO) 3.6.3 pending in-service valve testing. (The steam supply valves being closed and deenergized rendered the steam driven AFW pump inoperable.) Planned corrective actions to prevent recurrence include procedure changes and training.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)**1. REPORTING REQUIREMENT(S):**

This LER (50-530/2001-002-00) is being submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B), to report two violations of Technical Specification Limiting Condition for Operation (TSLCO) 3.0.4, which states, "When an LCO is not met, entry into a mode or other specified condition in the Applicability shall not be made except when the associated actions to be entered permit continued operation in the mode or other specified condition in the Applicability for an unlimited period of time."

TSLCO 3.7.5 for the Auxiliary Feedwater (AFW) System (EIS code: BA) is applicable in Mode 1 (power operation), Mode 2 (startup), and Mode 3 (hot standby). There is no TSLCO 3.0.4 exception provision in TSLCO 3.7.5.

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

The AFW System consists of one essential motor driven AFW pump "B" (EIS code: BA, P, MO), one non-essential motor driven AFW pump "N" (EIS code: BA, P, MO), and one essential steam turbine driven AFW pump "A" (EIS code: BA, P, TRB) configured into three trains. TSLCO 3.7.5 requires that three AFW trains be operable to ensure that the AFW System will perform the design safety function to mitigate the consequences of accidents that could result in overpressurization of the reactor coolant (EIS code: AC) pressure boundary. Two essential and one non-essential AFW pumps, in two diverse trains, ensure availability of residual heat removal capability for all events accompanied by a loss of offsite power and a single failure. This is accomplished by powering the essential motor driven AFW pump from an emergency bus (EIS code: EK). The non-essential motor driven AFW pump can be manually loaded on its emergency bus.

The third AFW pump is powered by a diverse means, a steam driven turbine supplied with steam from a source not isolated by the closure of the Main Steam Isolation Valves (MSIVs) (EIS code: SB, ISV).

The AFW System is considered to be operable when the components and flow paths required to provide AFW flow to the steam generators (EIS code: AB) are operable. This requires that the two motor-driven AFW pumps be operable in two diverse paths, each capable of supplying AFW to either steam generator. The turbine driven AFW pump shall be operable with redundant steam supplies from each of the two main steam (EIS code: SB) lines upstream of the MSIVs and capable of supplying AFW flow to either of the two steam generators. The piping, valves, instrumentation, and controls in the required flow paths shall also be operable.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)**3. INITIAL PLANT CONDITIONS:**

Prior to 1515 MST, on October 29, 2001, Unit 3 was in Mode 4 preparing to enter Mode 3 following a refueling outage. The steam supply valves to AFW pump "A" (containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A) (EIIS code: NH, ISV) were tagged closed and deenergized to comply with Condition "C" (containment isolation requirements) of TSLCO 3.6.3. AFW train "A" was inoperable. AFW train "B" and AFW train "N" were operable.

**4. EVENT DISCRIPTION:**

On October 29, 2001, while returning to service following a refueling outage, Unit 3 entered Mode 3 at 1515 MST and Condition "A" of TSLCO 3.7.5. Condition "A" of TSLCO 3.7.5 contains a note that allows the AFW pump "A" to be inoperable in Mode 3 for up to 7 days provided Mode 2 had not been entered following a refueling outage. This note was recently added by License Amendment 134. Control room personnel (utility, licensed) interpreted this note to allow entry into Mode 3 following a refueling outage with the AFW pump "A" inoperable. Maintenance had been performed on the AFW pump "A" and the associated steam supply valves during the outage. The steam supply valves were tagged closed and deenergized to comply with containment isolation requirements of TSLCO 3.6.3 pending in-service valve testing. (The steam supply valves being closed and deenergized rendered the AFW pump "A" inoperable.)

On October 30, 2001, at 0315 MST control room personnel (utility, licensed) commenced a cooldown and depressurization of the reactor coolant system to repair a degrading reactor coolant pump (RCP) seal (EIIS code: AC, P, SEAL). At 0643 MST Unit 3 entered Mode 4 and exited Condition "A" of TSLCO 3.7.5. At 1142 MST Unit 3 entered Mode 5 and exited Condition "C" of TSLCO 3.6.3 for containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A.

Following the repair work on the RCP seal, on November 1, 2001 at 2304 MST, Unit 3 entered Mode 4 and Condition "C" of TSLCO 3.6.3 for containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A. On November 2, at 0528 MST Unit 3 entered Mode 3 and Condition "A" of TSLCO 3.7.5. Following the Mode 3 entry, a training instructor (utility, licensed) working in the outage realized that the mode change might have been done inappropriately and informed the Shift Technical Advisor (STA) (utility, non-licensed) of his concern. The STA reviewed the situation and concurred that entering Mode 3

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with the AFW pump "A" was in violation of Technical Specification 3.0.4. On November 2, 2001 at 0854 MST control room personnel (utility, licensed) invoked TSLCO 3.0.5 to remove the tags from containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A for surveillance testing. The containment isolation valves and AFW pump "A" were tested and declared operable. Control room personnel (utility, licensed) exited Condition "A" of TSLCO 3.7.5.

**5. ASSESSMENT OF SAFETY CONSEQUENCES:**

There were no safety consequences associated with the inoperable AFW train "A" following refueling outage U3R9 for the following reasons:

TSLCO 3.0.4 was violated but compliance with TSLCO 3.7.5 was maintained. Once in Mode 3, following a refueling outage, decay heat load is very low. TSLCO 3.7.5 bases states that a 7 day completion time is allowed for an inoperable steam driven AFW pump in Mode 3 following a refueling outage due to the minimal core decay heat load and the availability of redundant AFW trains.

The condition existed for less than less than 24 hrs. Mode 2 was not entered.

Two other fully operable AFW trains were available during this time and capable of being powered by the emergency power source.

This condition would not have prevented the fulfillment of the safety function and did not result in a safety system functional failure as defined by 10 CFR 50.73(a)(2)(v).

**6. CAUSE OF THE EVENT:**

An independent investigation of this event was conducted in accordance with Palo Verde's corrective action program. The investigation determined there were two root causes for the event.

The first root cause was inadequate change management. In an effort to minimize overall plant risk, the in-service surveillance tests for the steam supply valves to AFW pump "A" were relocated to a surveillance test normally performed in Mode 3. The impact on the barriers to prevent this event were not thoroughly considered. Affected procedures were not properly revised and training was not implemented.

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The second root cause was misunderstanding TSLCO 3.7.5, TSLCO 3.7.5 Condition "A", and incorrectly applying TSLCO 3.0.4. The training related to the changes to the surveillance tests and Technical Specification 3.7.5 was inadequate.

**7. CORRECTIVE ACTIONS:**

After recognizing that TSLCO 3.0.4 had been violated, the Control Room Supervisor (utility, licensed) invoked TSLCO 3.0.5 to remove the tags from containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A to perform surveillance testing on the valves and AFW pump "A", exited Condition "A" of TSLCO 3.7.5, and declared AFW train "A" operable.

An independent investigation of this event is being conducted in accordance with Palo Verde's corrective action program. Based on the results of the investigation to date, the following corrective actions are planned to prevent recurrence:

The in-service surveillance test procedure for containment isolation valves SGA-UV-134, SGA-UV-134A, SGA-UV-138, and SGA-UV-138A and associated cross-reference procedures will be revised to allow performance of valve stroke timing and valve position indication testing in Modes 5 and 6.

The mode change checklist(s) will be revised to include a check of AFW pump "A" operable prior to changing from Modes 4 to 3.

Training will be conducted for licensed operators on TSLCO 3.7.5, and Technical Specification general use including TSLCOs 3.0.1, 3.0.4, and their associated Bases.

If the final results of the investigation substantially change the planned corrective actions, a supplement LER will be submitted.

**8. PREVIOUS SIMILAR EVENTS:**

In the past three years, no similar events have been reported pursuant to 10 CFR 50.73 for violation of TSLCO 3.0.4.