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 AUTH. NAME AUTHOR AFFILIATION
 GRABO, B.A. Arizona Public Service Co. (formerly Arizona Nuclear Power
 LEVINE, J.M. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-002-00: on 950303, identified that TS LCOs 3.5.3 &
 3.3.2 inconsistent w/assumptions used in SLB analysis. Cause
 still not determined. Night order issued to administratively
 apply TS 3.1.1.2.W/950330 ltr.

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05000528

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Arizona Public Service Company

PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

192-00926-JML/BAG/BE

March 30, 1995

JAMES M. LEVINE
VICE PRESIDENT
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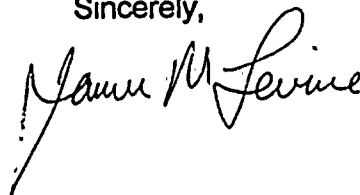
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, 50-530
License Nos. NPF-41, NPF-51, NPF-74
Licensee Event Report 95-002-00

Attached please find Licensee Event Report (LER) 95-002 prepared and submitted pursuant to 10CFR50.73. This LER reports a condition where the assumptions used in the Mode 3 Steam Line Break analysis were not maintained by the current Technical Specifications. In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region IV.

If you have any questions, please contact Burton A. Grabo, Section Leader, Nuclear Regulatory Affairs, at (602) 393-6492.

Sincerely,



JML/BAG/BE/pv

Attachment

cc: L. J. Callan (all with attachment)
K. E. Perkins
K. E. Johnston
INPO Records Center

070015
950407015B 950330
PDR ADDCK 05000528
S PDR



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 5 2 8	PAGE (3) 1 OF 0 7
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TITLE (4)
Analyses Failed to Consider as an Initial Condition the One Percent Shutdown Margin for ARI

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 NAMES	DOCKET NUMBERS	
									Palo Verde Unit 2	0 5 0 0 0 5 2 9	
0 3	0 3	9 5	9 5	- 0 0 2	- 0 0	0 3	3 0	9 5	Palo Verde Unit 3	0 5 0 0 0 5 3 0	

OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 2 (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0		20.402(b)		20.405(c)		50.73(a)(2)(M)		73.71(b)			
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(M)		73.71(c)			
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(M)		OTHER (Specify in Abstract below and in Text, NRC Form 306A)			
		20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(M)(A)					
		20.405(a)(1)(iv)	X	50.73(a)(2)(ii)		50.73(a)(2)(M)(B)					
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(M)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Burton A. Grabo, Section Leader, Nuclear Regulatory Affairs	TELEPHONE NUMBER AREA CODE 6 0 2 3 9 3 - 6 4 9 2
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs

SUPPLEMENTAL REPORT EXPECTED (14)

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) 0 5 3 1 9 5
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At approximately 1335 MST on March 3, 1995, Palo Verde Units 1 and 3 were in Mode 1 (POWER OPERATION) and Unit 2 was in Mode 6 (REFUELING) when it was identified by APS Nuclear Fuel Management personnel that Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.5.3 and 3.3.2 are inconsistent with the assumptions used in the Steam Line Break (SLB) analysis for validation of the Temperature Dependent Shutdown Margin (TDSMD) while in Mode 3 (HOT STANDBY) above 500 degrees Fahrenheit (F).

Additionally, a concern was identified that the SLB analysis only addressed the shutdown margin (SDM) TS LCO 3.1.1.2 that applies with any rod withdrawn. This TS LCO provides a minimum allowed SDM that varies between 4 percent and 6.5 percent as a function of Reactor Coolant System (RCS) temperature. However, TS LCO 3.1.1.1 is applicable with all rods in (ARI) and requires only 1 percent SDM. The SLB analysis did not consider the more restrictive 1 percent SDM TS LCO. It has been determined that the 1 percent SDM TS LCO 3.1.1.1 does not provide adequate SDM for the limiting license basis SLB event in Mode 3.

As an immediate corrective action, administrative controls were established to administratively apply TS LCO 3.5.2 during any operation above 500 degrees F, ensuring pressurizer pressure is maintained at 1700 psia or greater any time in Mode 3 with Tcold above 500 degrees F, and apply TS LCO 3.1.1.2 for any Unit in Mode 3.

Previously similar events have been reported pursuant to 10CFR50.73 in LER 528/94-002-02, dated October 28, 1994.

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		0	2	-	0	0	0
		0	2	OF	0	7	

TEXT

1. REPORTING REQUIREMENT:

This LER 528/529/530/95-002 is being written to report events that resulted in the power plant being in an unanalyzed condition that significantly compromised plant safety as specified in 10CFR50.73(a)(2)(ii)(A).

Specifically, at approximately 1335 MST on March 3, 1995, Palo Verde Units 1 and 3 were in Mode 1 (POWER OPERATION), operating at approximately 100 and 86 percent power respectively, and Unit 2 was in Mode 6 (REFUELING, at approximately atmospheric pressure and 104 degrees Fahrenheit), when APS Nuclear Fuel Management (NFM) personnel (utility, non-licensed) identified that Technical Specifications (TS) Limiting Conditions for Operation (LCO) 3.5.3 and 3.3.2 are inconsistent with assumptions used in the Steam Line Break (SLB) analysis for validation of the Temperature Dependent Shutdown Margin (TDSDM) while in Mode 3 (HOT STANDBY) above 500 degrees Fahrenheit (F).

TS LCO 3.5.3 requires that one Emergency Core Cooling System (ECCS) subsystems (BP, BQ, SA) shall be OPERABLE in Modes 3 and 4 with pressurizer pressure less than 1837 pounds per square inch absolute (psia).

TS LCO 3.3.2 requires that the low pressurizer pressure setpoint for Safety Injection (SI)(SA) be set at 1837 psia pressurizer pressure. In Modes 3 and 4, the pressurizer pressure may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached.

The SLB analysis assumed that a high pressure safety injection (HPSI) pump (BQ) is available with single failure of a HPSI pump. Therefore, TS LCO 3.5.3 could lead to no HPSI flow per the analysis

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TEXT TS LCO 3.3.2 allows the setpoint to be adjusted 400 psia below pressurizer pressure. Therefore, the time for SI flow can be delayed, and a return to criticality could occur.

Additionally, a concern was identified that the SLB analysis only addressed the shutdown margin (SDM) TS LCO 3.1.1.2 that applies with any rod withdrawn. This TS LCO provides a minimum allowed SDM that varies between 4 percent and 6.5 percent as a function of Reactor Coolant System (RCS) (AB) temperature. However, TS LCO 3.1.1.1 is applicable with all rods in (ARI) and requires only 1 percent SDM in Modes 3 through 5. The SLB analysis did not consider the more restrictive 1 percent SDM TS LCO. It has been determined that the 1 percent SDM TS LCO does not provide adequate SDM for the SLB event in Mode 3.

2. EVENT DESCRIPTION:

On February 22, 1995, APS NFM personnel identified that TS LCO 3.5.3 and 3.3.2 are inconsistent with assumptions used in the SLB analysis for validation of the TDSDM while in Mode 3 above 500 degrees F.

Additionally, a concern was identified that the SLB analysis only addressed the SDM TS LCO 3.1.1.2 that applies with any rod withdrawn.

Prior to the event, on October 28, 1994, LER 528/529/530/94-002-02 was submitted to report conditions regarding TS LCOs that would not ensure plant operation was maintained within the assumptions of the safety analysis as required by 10CFR50.36 (See Section 7).

One of the actions to prevent recurrence was to develop a long term action plan to review the safety analysis assumptions and groundrules document.

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TEXT As part of the action plan, on February 22, 1995, while reviewing the SLB analysis it was discovered that the conditions assumed in the SLB analysis were inconsistent with TS. The analysis evaluates TDSDM requirements for a SLB event in Mode 3 and 4.

The analysis indicates that at Tcold greater than 500 degrees F, credit for boron injection via a SIAS is necessary to ensure acceptable results. In Mode 3, at pressurizer pressure less than 1837 psia, TS LCO 3.5.3 only requires 1 HPSI pump to be operable. Two HPSI pumps, however, must be operable in order to meet the single failure criteria for a SLB event. Secondly, TS LCO 3.3.2 allows the SIAS setpoint to be reduced in Mode 3 as required to maintain the setpoint within 400 psi of pressurizer pressure during a controlled depressurization/cooldown. In this condition the concern is the SIAS setpoint could be below the saturation pressure of the pressurizer, thus contradicting one of the analysis assumptions that the RCS will be at subcooled conditions at all times.

Should a SLB occur under these conditions, the formation of a void in the reactor vessel upper head (RVUH)(AB) could delay or prevent reactor coolant system (RCS) pressure from dropping below SIAS setpoint, such that SI may not occur in time to prevent a return to criticality. A condition report/disposition request (CRDR) document was written to initiate an investigation of this condition.

The initial results of the investigation identified that this discrepancy had been first identified during development of the Safety Analysis Basis Document (SABD) in 1994 and was documented as an action item requiring additional follow-up. A cursory review was performed to identify if there were any additional discrepancies similar to the one identified. This review determined that there was one other SABD action item similar to the above condition. On February 28, 1995, a CRDR was written to investigate a concern, the fact that the wrong shutdown margin had been assumed for the startup of an inactive reactor cooling pump (RCP)(AB) analysis.

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TEXT

On March 3, 1995, the investigation determined that there was adequate negative reactivity in the core to ensure that during the startup of an inactive RCP, the core would not return to criticality. Therefore, this condition was determined to have no safety significance because the condition is bounded by the analysis.

On March 1, 1995, while reviewing the SLB analysis, the investigation identified that the analysis failed to consider that the SDM initial condition could be as low as 1 percent with ARI.

On March 3, 1995, the investigation determined that TS LCO 3.1.1.1 does not preserve adequate SDM to limit the consequences of a SLB in Mode 3 with ARI. A non-emergency notification was made via the ENS per 10CFR50.72(b)(1)(ii)(A).

3. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATION OF THIS EVENT:

A Probabilistic Risk Assessment (PRA) will be performed to determine if the above conditions had a significant impact for possible fuel failures in the core. Preliminary results are expected to be completed by April 14, 1995.

A Mode 3 SLB accident has not occurred at PVNGS; therefore, this event did not result in any challenges to the fission product barriers or result in any releases of radioactive materials and there were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or the health and safety of the public.

4. CAUSE OF THE EVENT:

An evaluation for each event is being performed in accordance with the APS Corrective Action Program. The evaluations for the events have not determined a root cause to date. The evaluations are ongoing and preliminary results are expected to be completed by April 21, 1995.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		8	9	5	-	0	0
		2	-	0	0	0	0
		6	OF	0	7		

TEXT

Provided the investigation is complete, the results are expected to be submitted in a supplement to this report on May 31, 1995.

5. STRUCTURES, SYSTEMS, OR COMPONENTS INFORMATION:

No structures, systems, or components were inoperable at the start of the event which contributed to this event. There were no component or system failures involved; therefore, no safety systems were rendered inoperable. No components with multiple functions were involved. There were no safety system actuations and none were required.

6. CORRECTIVE ACTIONS TO PREVENT RECURRENCE:

On February 22, 1995, a night order was issued to administratively apply TS LCO 3.5.2 during any Mode 3 operation and to ensure that pressurizer pressure is maintained at 1700 psia or greater any time in Mode 3 with Tcold above 500 degrees Fahrenheit.

On March 1 and 2, 1995, procedures 4XOP-XZZ10 Hot Standby to Cold Shutdown Mode 3 to Mode 5 and 4XOP-XZZ01 Cold Shutdown to Hot Standby Mode 5 to Mode 3 (respectively), were revised to provide the operator with the following CAUTION statements and actions:

Do not exceed a RCS temperature of 500 degrees F with RCS pressure less than 1700 psia (procedure 4XOP-XZZ01). Do not inop either HPSI pump with RCS temperature greater than 500 degrees F (procedure 4XOP-XZZ10).

IF RCS temperature is greater than 500 degrees F, AND RCS pressure is less than 1700 psia, THEN lower RCS temperature below 500 degrees F or raise RCS pressure above 1700 psia within 72 hours or be in at least hot standby within the next 6 hours and in hot shutdown within the following 6 hours.

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TEXT

Do not exceed a RCS temperature of 500 degrees F if either HPSI pump is inoperable.

IF RCS temperature is greater than 500 degrees F, AND either HPSI pump is inoperable, THEN comply with LCO 3.5.2 action a.

On March 3, 1995, a night order was issued to administratively apply TS 3.1.1.2 to ensure that the TDSDM is maintained in Mode 3.

On March 8, 1995, procedure 72ST-9RX09 Shutdown Margin, was revised to ensure that the SDM surveillance requirement for Mode 3 will be completed in accordance with LCO 3.1.1.2.

Actions required from the above investigations will be tracked by the Commitment Action Tracking System (CATS). The investigation is expected to evaluate a need for TS changes.

7. PREVIOUS SIMILAR EVENTS:

A similar event to this condition has been reported pursuant to 10CFR50.73 by LER 528/94-002-02, dated October 28, 1994. This LER reported conditions where TS LCOs would not ensure plant operation was maintained within the assumptions of the safety analysis as required by 10CFR50.36.

Additionally, the supplement identified a condition where the operating procedures for exercising Control Element Assemblies (CEA) in Modes 3, 4, and 5 could allow assumptions used in the subcritical CEA bank withdrawal analysis to be violated.

Corrective actions taken for the previous event would not have prevented this event.



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