10 CFR 50.73

APS *A subsidiary of Pinnacle West Capital Corporation*

Palo Verde Nuclear Generating Station
Dwight C. Mims
Senior Vice President
Nuclear Regulatory and Oversight
Tel. 623-393-5403
Fax 623-393-6077
Mail Station 7605
P. O. Box 52034
Phoenix, Arizona 85072-2034

102-06495-DCM/KAC
March 26, 2012

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
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 2012-001-00

Enclosed, please find Licensee Event Report (LER) 50-529/2012-001-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports a condition prohibited by Technical Specification (TS) 3.1.7, Regulating Control Element Assembly (CEA) Insertion Limits, after a regulating CEA group was not fully withdrawn within the TS required time limits following a reactor power cutback.

In accordance with 10 CFR 50.4, copies of this LER are being forwarded to the Nuclear Regulatory Commission (NRC) Regional Office, NRC Region IV and the Senior Resident Inspector. If you have questions regarding this submittal, please contact Mark McGhee, Operations Support Manager, Regulatory Affairs, at (623) 393-4972.

Arizona Public Service Company makes no commitments in this letter.

Sincerely,
D. C. Mims

DCM/TNW/MAM/KAC/hsc

Enclosure
cc: E. E. Collins Jr. NRC Region IV Regional Administrator
B. K. Singal NRC NRR Project Manager for PVNGS (electronic / paper)
L. K. Gibson NRC NRR Project Manager for PVNGS (electronic)
J. R. Hall NRC NRR Senior Project Manager (electronic)
M. A. Brown NRC Senior Resident Inspector for PVNGS

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.

LICENSEE EVENT `REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Technical Specification LCO 3.1.7 Completion Time Exceeded

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
01	25	2012	2012	- 001 -	00	03	26	2012	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

60

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

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Mark McGhee, Operations Support Manager, Regulatory Affairs	623-393-4972

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

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On January 25, 2012, at approximately 1005 Mountain Standard Time, a reactor power cutback occurred in Unit 2 due to the loss of one main feedwater pump. Main turbine load was automatically reduced and all regulating group 4 and group 5 control element assemblies (CEAs) were automatically fully inserted to lower reactor power to approximately 50 percent. The Reactor Regulating System then automatically inserted regulating group 3 CEAs below the Technical Specification (TS) Transient Insertion Limits to maintain Reactor Coolant System temperature within limits. TS LCO 3.1.7 Regulating CEA Insertion Limits are not applicable for two hours after a reactor power cutback and then require CEA positions to be restored to within limits in the next two hours or be in Mode 3 within the following six hours. Group 4 and 5 CEAs were restored to within TS LCO 3.1.7 transient insertion limits at 1144. The regulating group 3 CEAs were withdrawn to the upper group stop position of 145.5 inches at 1124 but were not fully withdrawn to within limits (greater than or equal to [>/=] 147.75 inches) until 2030, which exceeded the TS LCO 3.1.7 Completion Time by 25 minutes. The root cause was determined to be inadequate procedural guidance necessary to ensure regulating CEA group 3 was fully withdrawn to comply with the requirements of TS LCO 3.1.7 insertion limits. Corrective actions to prevent recurrence include procedure revisions to provide the needed guidance to ensure CEA insertion limits are met following a reactor power cutback. No similar events have been reported to the NRC in the prior three years.

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NARRATIVE

All times are Mountain Standard Time and approximate unless otherwise indicated.

1. REPORTING REQUIREMENT(S):

This LER is being submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B) as an operation prohibited by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.1.7, Regulating Control Element Assembly (CEA) Insertion Limits. The LCO requires that the regulating CEA groups shall be limited to the insertion limits specified in the Core Operating Limits Report (COLR). If any of the Required Actions and associated Completion Times are not met for LCO 3.1.7 Conditions A through D, then TS LCO 3.1.7 Condition E requires that the plant be in Mode 3 within 6 hours. TS LCO 3.1.7 is not applicable for two hours following a reactor power cutback operation.

Specifically, the Completion Time of TS LCO 3.1.7 Condition E, which requires that the plant be in Mode 3 within 6 hours, was exceeded at 2005 on January 25th, 2012. Condition E should have been entered at 1405 as a result of exceeding the Completion Time for restoring regulating CEA group 3 to within insertion limits as specified by Required Action A.1.

To comply with TS LCO 3.1.7 at 60% reactor power, regulating CEA group 3 must be fully withdrawn to meet the transient insertion limit. The COLR defines fully withdrawn as greater than or equal to (>/=) 147.75 inches withdrawn.

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

The control element drive mechanism control system (CEDMCS) (EIIS: AA) provides control signals and motive power to the coils of the magnetic jacks in the 89 control element drive mechanisms (CEDMs) (EIIS: AA) which move, hold, and release the CEAs (EIIS: AA). The CEAs absorb neutrons to control reactivity.

CEAs are grouped in shutdown, regulating, and part-strength groups. Shutdown CEA groups remain fully withdrawn during reactor operation to ensure a rapid safe shutdown of the reactor. Regulating and part-strength CEA groups are positioned to control core flux distribution and reactivity during reactor operation. Limits on regulating CEA group insertion have been established, and all CEA positions are monitored and controlled during power operation to ensure that the power distribution and reactivity limits are preserved.

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CEDMCS controls can raise or lower CEAs in groups or individually. When moved as a group, withdrawal is limited by the upper group stop (UGS) feature, which limits outward group travel to 145.5 inches withdrawn. To fully withdraw the CEAs, past the UGS position, the operator must withdraw each CEA individually to the fully withdrawn position as defined in the COLR.

The reactor power cutback system (EIIS: JD) quickly reduces plant power, when greater than 75% power, for events such as large load rejection or loss of a single main feedwater pump. This function is performed by full insertion of regulating CEA groups 4 and 5 and a rapid turbine load reduction (if the main turbine is not tripped). The steam bypass control system (SBCS) will operate simultaneously to provide additional heat removal, as necessary, to match primary plant power with steam demand. The reactor regulating system (RRS) will operate to insert or withdraw regulating CEA groups in order to match reactor power with steam demand. Following a reactor power cutback, plant power will decrease to approximately 50 to 60 percent with the RRS, SBCS, Digital Feedwater Control System, and other related control systems operating simultaneously to stabilize the plant.

3. INITIAL PLANT CONDITIONS:

On January 25th, 2012, Unit 2 was in Mode 1 operating at 100 percent power. There were no structures, systems, or components inoperable at the time of the event that contributed to the event.

4. EVENT DESCRIPTION:

On January 25th, 2012 at 1005, Unit 2 experienced a loss of a non-class 1E 4.16 KV power bus, which caused a low suction pressure trip of the "B" main feedwater pump, resulting in a reactor power cutback. Following the reactor power cutback, regulating CEA groups 4 and 5 inserted as designed and were subsequently withdrawn per the reactor power cutback abnormal operating procedure to restore CEA group overlap and to restore the CEAs to within their insertion limits as required by TS LCO 3.1.7. Regulating CEA group 3 inserted as designed and was subsequently withdrawn to the UGS position of 145.5 inches at 1124. No additional changes were made to regulating group 3 CEA positions for the remainder of the day shift. Following shift turnover, the regulating group 3 CEAs were individually withdrawn to

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149.25 inches at 2030, at which time regulating group 3 CEAs were in compliance with the insertion limits of TS LCO 3.1.7 and the COLR.

During a review of plant reactor power cutback response, a reactor engineer noted that initial withdrawal of regulating group 3 CEAs was stopped at the UGS position. At 2101, the reactor engineer notified the control room staff that regulating group 3 CEAs at the UGS position potentially did not satisfy TS LCO 3.1.7 transient insertion limits because the COLR required regulating CEA group 3 to be fully withdrawn to >/= 147.75 inches. Although in compliance at the time, Operations determined that regulating CEA group 3 at the UGS position of 145.5 inches had not met the fully withdrawn requirements of the COLR and TS LCO 3.1.7.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

This condition did not adversely affect plant safety or the health and safety of the public. The condition did not result in any challenges to the fission product barriers or result in any releases of radioactive materials. The safety limits for departure from nucleate boiling ratio and fuel peak centerline temperature were not exceeded as a result of this event. Therefore, there were no actual adverse safety consequences as a result of this condition.

An evaluation was performed to quantify the effect of the excess regulating CEA group 3 insertion on the available shutdown margin. This evaluation determined that the reactivity effect from regulating CEA group 3 being inserted 2.25 inches below its transient insertion limit was sufficiently compensated for by the reactivity associated with the positions of regulating CEA groups 4 and 5. Therefore, the failure to comply with TS LCO 3.1.7 insertion limits did not reduce available shutdown margin below the minimum acceptable value and did not affect the associated safety function to safely shutdown the reactor. The small deviation from the transient insertion limit did not represent an unanalyzed condition that significantly degraded plant safety.

This event did not prevent the fulfillment of a safety function and did not result in a safety system functional failure as described by 10 CFR 50.73(a)(2)(v).

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6. CAUSE OF THE EVENT:

The root cause was determined to be inadequate procedural guidance necessary to ensure regulating CEA group 3 was fully withdrawn to comply with the requirements of TS LCO 3.1.7 insertion limits.

Contributing causes included inadequate procedure use and adherence and operator knowledge weaknesses.

7. CORRECTIVE ACTIONS:

To prevent recurrence, the procedures for operation following a reactor power cutback event will be revised to include direction on positioning all CEA groups above the limits required by TS LCO 3.1.7 and the COLR.

To address related procedure use and adherence and operator knowledge weaknesses, licensed operator continuing training simulator sessions will be conducted involving the revised abnormal operating procedures that will include restoring CEA positions to address compliance with TS LCO 3.1.7 insertion limits. Licensed operator training tasks will be revised to require periodic training on compliance with CEA insertion TSs following reactor power cutback.

8. PREVIOUS SIMILAR EVENTS:

A similar event occurred in 1996 in Unit 3 where several regulating group 3 CEAs were not withdrawn to the TS required fully withdrawn position following a load rejection reactor power cutback event. At that time, TS LCO 3.1.3.6 specified a fully withdrawn position of >/= 144.75 inches which was below the UGS position of 145.5 inches. When regulating group 3 CEA motion was stopped at the UGS position, several group 3 CEAs remained below the fully withdrawn position due to normal system operation which allows small position differences within a group. During surveillance testing it was noted that several regulating group 3 CEAs remained below the fully withdrawn acceptance criteria that existed at that time (>/= 144.75 inches). The 1996 corrective actions did not implement adequate barriers to prevent recurrence because no causal evaluation was done and specific guidance was not established to ensure CEA insertion limits are restored following reactor power cutback.