10 CFR 50.73

A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear Generating Station

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102-06403-DCM/FJO
September 06, 2011

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket No. STN 50-528, STN 50-529, STN 50-530
License No. NPF-41, NPF-51, and NPF-74
Licensee Event Report 2011-003-00

Enclosed please find Licensee Event Report (LER) 50-528/2011-003-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports that the control room essential filtration system outside air dampers were maintained normally closed instead of the normally open position stipulated in the updated final safety analysis report. This resulted in a condition prohibited by Technical Specifications affecting all three units.

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 Marianne Webb, Section Leader, Regulatory Affairs, at (623) 393-5730.

Arizona Public Service Company makes no commitments in this letter.

Sincerely,

DCM/TNW/MNW/FJO/gat

Enclosure

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

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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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Palo Verde Nuclear Generating Station (PVNGS) Unit 1	05000528	1 OF 6

4. TITLE

Control Room Essential Filtration Misalignment Resulting in Condition Prohibited by Technical Specifications

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
									PVNGS Unit 2	0500529
04	13	2011	2011	- 003 -	00	09	06	2011	PVNGS Unit 3	0500530

9. OPERATING MODE

1 / Defueled / 1

10. POWER LEVEL

100 / 0 / 100

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

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Marianne Webb, 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

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 April 13, 2011, control room essential filtration system (CREFS) outside air intake (OSA) dampers were found to be in the normally closed position instead of the normally open position stipulated in the updated final safety analysis report. This incorrect configuration was the result of procedure changes made in 1986.

Each train of the CREFS system contains two OSA dampers in series, with each damper actuated from one of the two separate channels of the control room essential filtration actuation signal (CREFAS). Upon identification, Unit 1 and Unit 3 entered Technical Specification (TS) 3.3.9, condition A when both channels of CREFAS were determined to be inoperable. In response, both units placed an OPERABLE train of CREFS into operation per required action A.1. Unit 2 was defueled and irradiated fuel assemblies were not being moved; therefore, TS 3.3.9 was not applicable to Unit 2 at the time this condition was identified.

In the three years prior to this event, a similar legacy issue was reported in which station procedures directed system configurations not permitted by the plant design (LER 0500528/529/530/2009-001-00, Safety Injection System Recirculation Alignment Results in Unanalyzed Condition).

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NARRATIVE

1. REPORTING REQUIREMENT(S):

This event is reportable as a condition prohibited by Technical Specifications (TSs) per 10 CFR 50.73(a)(2)(i)(B).

This condition was originally identified on April 13, 2011, and was incorrectly screened as not reportable. A subsequent review completed on July 5, 2011, determined the condition was reportable as stated above. This condition was documented in the Palo Verde corrective action program and in NRC inspection report 05000528/529/530/2011003, dated August 11, 2011.

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

The control room essential filtration actuation signal (CREFAS)(EIIS: JE) automatically actuates the control room essential filtration system (CREFS)(EIIS: VI). The CREFAS is initiated by a control room air intake high airborne radioactivity signal from either of two radiation monitors (EIIS: IL) RU-29 and RU-30, a fuel building essential ventilation actuation signal (FBEVAS)(EIIS: JE), or containment purge isolation actuation signal (CPIAS)(EIIS: JE). A manual actuation feature is also provided for the CREFAS. A CREFAS actuated by one channel will also result in a cross-channel actuation of the redundant CREFAS channel.

The CREFS consists of two separate, seismically qualified, redundant essential ventilation flow trains. Each flow train consists of an essential air handling unit (AHU) with high efficiency filters and charcoal adsorbers to process intake airflow and recirculate air flow to the control room envelope. Low leakage ductwork and dampers are provided to minimize unfiltered air in-leakage. The control room post-accident habitability requirements are met by either CREFS train.

The B train CREFS shares ductwork with the control room normal (non-essential) ventilation system and both serve the inverter room and communication room on the control building 120 foot level during non-emergency conditions. The normal AHU ductwork, inverter room, and communication room are automatically isolated from the train B CREFS upon a CREFAS actuation.

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The A train CREFS does not share ductwork with the normal ventilation or B train CREFS except for final control room outlet ducts. The A train CREFS does not supply the inverter room or the communication equipment room.

Separate ductwork, exhaust fans, and exhaust dampers are provided for the kitchen and restroom facilities inside the control room ventilation envelope. The kitchen and restroom exhaust dampers close when actuated by CREFAS.

Upon actuation by a CREFAS, dampers close to isolate the control room normal AHU. Air returning from the control room, mixed with outside air, is drawn into the essential AHUs which filter the air and discharge it to the essential supply ductwork.

Each essential AHU train receives outside air through supply ductwork that contains two electro-hydraulically operated outside air intake (OSA) dampers (EIIS: JE) in series. Each of the two dampers in a train is actuated by one of the two separate channels of CREFAS. This post-CREFAS alignment (essential filtration mode) ensures a positive pressure exists inside the control room to prevent in-leakage from outside air.

The essential AHUs start and OSA dampers open automatically upon receipt of a Safety Injection Actuation Signal (SIAS)(EIIS: JE) or Loss Of Power (LOP)(EIIS: JE). These actuations are separate from CREFAS actuation logic.

The OSA dampers also close automatically in response to a control room ventilation isolation actuation signal (CRVIAS)(EIIS: JE). The CRVIAS isolates the control room from outside air and recirculates the control room return air through essential AHUs.

The OSA dampers fail in the open position upon interruption of electrical power to the electro-hydraulic actuators.

To address single failure criteria, the design configuration for the OSA dampers relies upon the dampers being maintained in a normally open position as stipulated in the updated final safety analysis report (UFSAR).

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NARRATIVE

TS Limiting Condition for Operation (LCO) 3.3.9 requires one channel of CREFAS to be OPERABLE during Modes 1, 2, 3, 4, 5, and 6 and during movement of irradiated fuel assemblies.

3. INITIAL PLANT CONDITIONS:

On April 13, 2011, when the condition was initially identified, Units 1 and 3 were in Mode 1 and at approximately 100 percent power, and Unit 2 was defueled. There were no other systems out of service that contributed to this event.

4. EVENT DESCRIPTION:

On April 13, 2011, during the investigation for a separate control room ventilation system issue identified in LER 05000529/2011-001-00, CREFS OSA dampers were found to be in the normally closed position as directed by station operating procedures instead of the normally open position stipulated in the UFSAR.

Unit 1 and Unit 3 entered TS 3.3.9, condition A when both channels of CREFAS were determined to be inoperable. In response, both units placed an OPERABLE train of CREFS into operation per required action A.1. Unit 2 was defueled and irradiated fuel assemblies were not being moved; therefore, TS 3.3.9 was not applicable to Unit 2 at the time the condition was identified.

The incorrect procedure direction placing the OSA dampers in a normally closed position stemmed from a March 1986 engineering evaluation request (EER). This change failed to take into account applicable single failure criteria that, if not met, would render the system inoperable. The EER addressed excessive condensation in the Unit 1 B train essential AHU. The EER concluded the cause and source of this condensation was air leakage around the backdraft damper which prevents reverse flow through the AHU. The EER recommended that closing the OSA dampers would alleviate this condensation. It was intended that once the backdraft damper air leakage problem was corrected the procedures would be revised to return the OSA dampers to the original design configuration of normally open.

In March 1988, modification packages were approved to repair the backdraft dampers. The modification packages contained instructions to change the position of the OSA dampers back

to the normally open position after the modifications were completed. The modifications were completed in 1991, 1997, and 1998. However, the procedure change requests were not implemented and the OSA dampers remained in the normally closed position.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

In the three years prior to the date this condition was originally identified, there were no events that required automatic actuation of CREFAS. If such an event had occurred, the CREFAS cross-channel actuation of the redundant CREFAS train would have ensured actuation of a single train of CREFS required to maintain control room habitability for analyzed accidents; therefore, the safety function provided by CREFAS to mitigate the consequences of analyzed accidents would have been fulfilled.

This event did not result in any challenges to the fission product barriers or result in the release of radioactive materials. There were no actual safety consequences as a result of this event. This event did not prevent the fulfillment of a safety function nor did it result in a safety system functional failure as described by 10 CFR 50.73 (a)(2)(v).

6. CAUSE OF THE EVENT:

The cause of the condition prohibited by TS 3.3.9 was incorrect procedure changes that changed the normal position of the OSA dampers from open to closed, contrary to the design configuration. This was a legacy issue that originated in 1986.

7. CORRECTIVE ACTIONS:

Units 1 and 3 each placed a CREFS train into operation to comply with TS 3.3.9 upon notification of the OSA damper misalignment. Unit 2 was not in a mode of applicability for the TS and did not need to take immediate actions.

The procedures for operation of the control room ventilation system were changed to require the OSA dampers to be in a normally open position as stipulated in the UFSAR.

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No additional corrective actions have been taken. Any additional corrective actions taken as a result of the investigation of this event will be implemented in accordance with the requirements of the Palo Verde corrective action program. If information is subsequently developed which would significantly affect a reader's understanding or perception of this event, a supplement to this LER will be submitted.

8. PREVIOUS SIMILAR EVENTS:

This event is similar to legacy issues identified in two LERs.

Prior to three years ago:

- LER 0500528/529/530/2004-009-01, Emergency Core Cooling System Piping Voids May Have Prevented Fulfillment of Safety Function, identified that the essential core cooling system containment sump and suction line were not filled with water as required by the plant's design.

Within the last three years:

- LER 0500528/529/530/2009-001-00, Safety Injection System Recirculation Alignment Results in Unanalyzed Condition, identified procedure changes that permitted system operation of the safety injection system in a configuration not permitted by its design.

Both of these LERs identified similar issues in which station procedures directed system configurations not permitted by the plant design and stemmed from processes used early in the plant's operating history. The first listed LER resulted in a Notice of Violation (NOV) for operating the station with dry essential core cooling system containment sump suction pipes (EA-05-051). A component design basis review of the Safety Injection System, a corrective action from the NOV, resulted in the identification of the second LER listed above. Additional corrective actions from the NOV that strengthened corrective action and evaluation processes, including questioning attitude, at the station led to the identification of the misaligned OSA dampers identified in this LER.