



A subsidiary of Pinnacle West Capital Corporation

10 CFR 50.73

Palo Verde Nuclear  
Generating Station

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102-06566-DCM/TNW/MAM/DFH  
September 11, 2012

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

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS) Unit 1**  
**Docket No. STN 50-528**  
**License No. NPF- 41**  
**Licensee Event Report 2011-002-01**

Please find attached Licensee Event Report (LER) 50-528/2011-002-01 which supplements an LER that reported a condition prohibited by Technical Specifications. This supplement is being submitted to report the results of the cause investigation and the associated corrective actions.

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, Operation 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/DFH/hsc

Enclosure

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

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*IE22*  
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**LICENSEE EVENT REPORT (LER)**(See reverse for required number of  
digits/characters for each block)

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](mailto: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.

<b>1. FACILITY NAME</b> Palo Verde Nuclear Generating Station (PVNGS) Unit 1	<b>2. DOCKET NUMBER</b> 05000528	<b>3. PAGE</b> 1 OF 5
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**4. TITLE**  
Nonconforming Condition Renders the Qualified Safety Parameter Display System 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
06	29	2011	2011	- 002 -	01	09	11	2012	FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b>  1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> (Check all that apply)			
<b>10. POWER LEVEL</b>  100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER	
FACILITY NAME Mark McGhee, Operations Support Manager, Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) 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

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>					<b>15. EXPECTED SUBMISSION DATE</b>		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO				

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

On July 1, 2011, at approximately 15:30 Mountain Standard Time, both trains of the Qualified Safety Parameter Display System (QSPDS) were declared INOPERABLE when it was discovered that the 120 volt class power supply cables to the A and B train QSPDS display modems did not meet the physical separation criteria per Regulatory Guide 1.75 contained in the PVNGS Installation Specification for Cable Splicing and Terminations 13-EN-0306. Accordingly, Conditions A and C of Technical Specification Limiting Condition for Operation (LCO) 3.3.10, Post Accident Monitoring (PAM) Instrumentation, were entered. On July 3, 2011, at 16:05, Conditions A and C of Technical Specification LCO 3.3.10 were exited after the power supply cables to the A and B train QSPDS display modems were rerouted per work order instructions to meet the physical separation criteria.

The root cause of this event was inadequate adherence to cable separation criteria during modification and maintenance activities which led to the installation of power supply cables for the A and B train QSPDS display modems with less than six inches of physical separation. To prevent recurrence, the maintenance work order writer's guide was revised to require that cable separation criteria be incorporated into Main Control Board (RM) work instructions. In the past three years, PVNGS has not reported a similar event of nonconformance to Regulatory Guide 1.75.

**LICENSEE EVENT REPORT (LER)  
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<b>Palo Verde Nuclear Generating Station Unit 1</b>	05000528	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	<b>2 OF 5</b>
		2011 --	002 --	01	

**NARRATIVE**

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

**1: REPORTING REQUIREMENT(S):**

This Licensee Event Report (LER) is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications (TS). Trains A and B of the Qualified Safety Parameter Display System (QSPDS)(EIS: IP) were inoperable for an amount of time greater than the 30 days allowed by TS Limiting Condition for Operation (LCO) 3.3.10, Post Accident Monitoring (PAM) Instrumentation.

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

The QSPDS analyzes and processes selected plant parameters and displays them to assist the operator (utility - licensed) in quickly assessing plant conditions during accident situations. Signals obtained from seismically qualified instrumentation are analyzed by class 1E microprocessors. The output of these microprocessors is transmitted to the Control Room for continuous display and recording. These outputs are also transmitted to the non-class Emergency Response Facility Data Acquisition and Display System (ERFDADS)(EIS: IP).

The QSPDS consists of two redundant class 1E channels which are seismically qualified and electrically and physically independent for the display of safety parameters including inadequate core cooling (ICC) processing information. Indications provided include:

- Core exit temperature - signal processing and display
- Reactor Coolant System saturation (or subcooled) margin - computation and display
- Reactor vessel water level - signal processing and display

The ICC detection parameters provide the operator with continuous indication of the thermal-hydraulic state within the reactor vessel during the progression of an event leading to and from ICC.

The QSPDS transmits data to the Control Room display units via fiber optic communication modems which are installed in control board B04. The fiber optic communication modems receive 120 VAC power independent of other QSPDS component power supplies. The QSPDS includes other independent data transmission interfaces to display equipment on control board B02 and ERFDADS.

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**3. INITIAL PLANT CONDITIONS:**

On June 29, 2011, Palo Verde Unit 1 was in Operating MODE 1 (Power Operation) at 100 percent power at normal operating temperature and normal operating pressure. There were no other major structures, systems, or components that were inoperable at the start of the event that contributed to the event.

**4. EVENT DESCRIPTION:**

On June 29, 2011, in preparation for a modification to upgrade QSPDS, a walk down of the installed system in Unit 1 was performed. During the walk down, it was discovered that the 120 volt class power supply cables to the A and B train QSPDS display modems in control board B04 did not meet the minimum six inch physical separation criteria per Regulatory Guide 1.75 contained in the PVNGS Installation Specification for Cable Splicing and Terminations 13-EN-0306. On July 1, 2011, at 15:30, following further evaluation by Engineering and Operations, both trains of QSPDS were declared INOPERABLE and Conditions A and C of TS LCO 3.3.10, Post Accident Monitoring (PAM) Instrumentation, were entered. On July 3, 2011, at 16:05, both trains were declared OPERABLE and Conditions A and C of TS LCO 3.3.10 were exited after the power supply cables to the A and B train QSPDS display modems were rerouted per work order instructions to meet the physical separation criteria.

**5. ASSESSMENT OF SAFETY CONSEQUENCES:**

The inadequate separation between the power supply cables to the A and B train QSPDS display modems could potentially cause a loss of power, due to a single fault, to both of the display modems that feed the QSPDS displays located on the Unit 1 control board B04. In the event that the QSPDS displays become unavailable, the train A Post Accident Monitoring recorders on control board B02, fed directly from the A QSPDS instrument chassis, would still remain available to the operators. Additionally, the communication link between both trains of QSPDS and ERFDADS would remain available to permit full functionality of data retrieval via ERFDADS for the operators and the Emergency Response Organization.

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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 and did not result in a safety system functional failure as described by 10 CFR 50.73 (a)(2)(v).

**6. CAUSE OF THE EVENT:**

The root cause of this event was inadequate adherence to cable separation criteria during modification and maintenance activities which led to the installation of power supply cables for the A and B train QSPDS display modems with less than six inches of physical separation. Contributing to the event was a lack of knowledge of the specification requirements by work planners and front line craftsmen.

**7. CORRECTIVE ACTIONS:**

As an immediate corrective action, the power supply cables to the A and B train QSPDS display modems were rerouted per work order instructions to meet the physical separation criteria and both trains of QSPDS were declared OPERABLE.

To prevent recurrence, the maintenance work order writer's guide was revised to require that cable separation criteria contained in the PVNGS Installation Specification for Cable Splicing and Terminations 13-EN-0306 be incorporated into Main Control Board work instructions.

The following corrective actions were completed:

- Maintenance personnel performed walkdowns of main control board cabinets in all three units to identify and correct non-conforming cable separation configurations.
- Training was provided to front line craftsmen and work planners on cable separation criteria contained in the PVNGS Installation Specification for Cable Splicing and Terminations 13-EN-0306.

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- Work instructions for pending QSPDS upgrade modifications were revised to include cable separation criteria contained in the PVNGS Installation Specification for Cable Splicing and Terminations 13-EN-0306.

8. PREVIOUS SIMILAR EVENTS:

The station has not identified previous similar events in which the root cause was attributed to inadequate adherence to cable separation criteria.