



A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear  
Generating Station

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102-05875-DCM/DFH  
August 04, 2008

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 2008-003-00**

Attached, please find Licensee Event Report (LER) 50-528/2008-003-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports a condition prohibited by Technical Specification (TS) and the completion of a shutdown required by TS Limiting Condition for Operation 3.5.1, Condition C, for Safety Injection Tanks (Operating).

In accordance with 10 CFR 50.4, copies of this LER are being forwarded to the NRC Regional Office, NRC Region IV and the Senior Resident Inspector. If you have questions regarding this submittal, please contact James A. Proctor, Section Leader, Regulatory Affairs, at (623) 393-5730.

Arizona Public Service Company makes no commitments in this letter.

Sincerely,

DCM/JAP/DFH/gat

Attachment

cc: E. E. Collins Jr. NRC Region IV Regional Administrator  
M. T. Markley NRC NRR Project Manager - (send electronic and paper)  
R. I. Treadway NRC Senior Resident Inspector for PVNGS

TEAD  
NRR

**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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 4
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**4. TITLE**  
Technical Specification Required Shutdown – Safety Injection Tank 1A 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	05	08	2008	- 003 -	00	08	04	2008		05000
									FACILITY NAME	DOCKET NUMBER
										05000

<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 checked="" 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) <input type="checkbox"/> OTHER <div style="text-align: right; font-size: small;">Specify in Abstract below or in NRC Form 366A</div>

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME James A. Proctor, Section Leader, Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) 623-393-5730
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**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	BP	VSL	A661	Y					

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

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

On June 6, 2008, at 01:48 Mountain Standard Time (MST), Unit 1 completed a shutdown to Mode 3 followed by a reduction in the reactor coolant system pressure to less than 1837 pounds per square inch as required by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.5.1, Condition C, for an inoperable Safety Injection Tank (SIT) 1A. SIT 1A was declared inoperable at 02:25 on June 5, 2008, during an Operations Shift Manager's review of corrective action documents which identified a leak in the SIT 1A at the joint between the tank head and the SIT vent line nozzle. The actual time of discovery was at approximately 13:30 on June 4, 2008, when a maintenance team reported the completion of an inspection of SIT 1A and that a leak had been identified; therefore, entry into LCO 3.5.1, Condition B was delayed.

The leak was repaired by performing an American Society of Mechanical Engineers (ASME) Class III weld repair to the outer surface of the vent nozzle and the tank was returned to service.

No similar conditions have been reported in the past three years.

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CONTINUATION SHEET**

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Palo Verde Nuclear Generating Station Unit 1	05000528	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2008	- 003	- 00	

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

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 a condition prohibited by Technical Specifications (TS) for the delayed entry into a Limiting Condition for Operation for an inoperable safety injection tank and 10 CFR 50.73(a)(2)(i)(A) as a shutdown required by TS. Notification of this event was made to the Nuclear Regulatory Commission (NRC) on June 5, 2008, at 02:40 via the Event Notification System (ENS) on ENS report 44274.

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

There are four Safety Injection Tanks (SIT) (EIS: BP) in each unit which contain borated water and are pressurized with nitrogen. They discharge their contents to the Reactor Coolant System (RCS) (EIS: AB) following depressurization as a result of a Loss-of-Coolant Accident (LOCA). Each tank is piped into a cold leg of the RCS via a safety injection nozzle located on the RCS piping near the reactor vessel inlet. The tank vent nozzle is located on the upper head of the tank which is in contact with the nitrogen blanket. Each tank is approximately 41 ft. high and 9 ft. in diameter. The operating level is maintained at approximately 32 ft. to 34 ft. The upper level alarm limit is set at approximately 35 ft. Technical Specifications requires boron concentration be in the range of 2300 parts per million (ppm) to 4400 ppm; and that the nitrogen cover pressure be maintained from 600 pounds per square inch, gauge (psig) to 625 psig. The SIT operates at a temperature range of 60° Fahrenheit (F) to 140° F.

3. INITIAL PLANT CONDITIONS:

On June 5, 2008, Palo Verde Unit 1 was in Mode 1 (power operations), operating at approximately 100 percent power. There were no major structures, systems, or components inoperable at the start of the event that contributed to the event.

4. EVENT DESCRIPTION:

On June 4, 2008, during a scheduled containment entry, SIT 1A was inspected for leaks. A leak was located at the joint between the tank head and the SIT vent line nozzle. Upon exiting from the containment, at 13:30, maintenance personnel communicated the results of the inspection to the day shift Control Room Supervisor (CRS). This information was misinterpreted by the CRS who did not consider a potential impact to the vessel integrity and did not pursue clarification. On June 5, 2008, while reviewing corrective action documentation for the SIT 1A leak inspection, the night shift Shift Manager determined SIT 1A was inoperable and, at 02:25, SIT 1A was declared inoperable and TS LCO 3.5.1, Condition B, was entered requiring SIT 1A to be returned to operable status within 24 hours.

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To repair SIT 1A, Unit 1 control room staff commenced a plant shutdown at 23:56 on June 5, 2008, and manually tripped the reactor at 01:48 on June 6, 2008. Control room staff entered LCO 3.5.1, Condition C, at 02:25 on June 6, 2008, when the allowable time had expired for Condition B. LCO 3.5.1, Condition C, requires the plant to be placed in Mode 3 within 6 hours and pressurizer pressure to be reduced to less than 1837 psia within 12 hours. Unit 1 exited LCO 3.5.1, Conditions B and C at 05:30 on June 6, 2008, when pressurizer pressure was reduced to less than 1837 psia.

Investigation revealed a small amount of nitrogen leakage through the nozzle weld for the 2 inch nozzle vent line at the top of SIT 1A. Since the original weld for this connection is on the inside of the vessel and repairing the weld at the inside location was not practical, the nozzle repair consisted of making a new weld to attach the nozzle to the outer surface of the vessel. This repair method complies with American Society of Mechanical Engineers (ASME) Code requirements. Unit 1 returned to power on June 8, 2008. However, since the flaw that resulted in the nitrogen leak could not be characterized and was left in place, an ASME Relief Request was submitted on July 11, 2008.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

The size of the leak did not impact plant operator's ability to maintain SIT 1A within the allowable TS pressure band, therefore, the plant remained within safety limits throughout the event. An analysis was performed that demonstrates that the worst case flaw in the nozzle or attachment weld will not propagate such that the structural integrity of the new weld or the tank boundary is affected.

The condition described in this LER did not result in any challenges to fission product barriers or in any offsite releases. Therefore, there were no actual adverse safety consequences or implications as a result of this event and the event did not adversely affect the safe operation of the plant or health and safety of the public as a result of the weld flaw on SIT 1A.

This condition would not have prevented the fulfillment of any 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:

The cause of the leak was the loss of SIT 1A vessel integrity due to a through-wall nitrogen leak. The leak appears to be from a possible flaw in the weld material between the vessel and the vent line nozzle. The vessel base metal was demonstrated to be unaffected.

Ineffective involvement from Operations personnel in the containment entry activities caused the delayed entry into LCO 3.5.1, Condition B, which led to exceeding the allowed outage time

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for LCO 3.5.1, Condition B and C. The expectation for the Operations Department to participate in containment entry activities while the unit is at power was unclear. Operations personnel did not attend the pre-entry brief where the entry team had discussed the potential impacts to SIT 1A operability. As a result, when the entry team exited the containment to notify the control room of their findings, the CRS believed the call was primarily to inform the control room staff that the team had exited containment. Although he acknowledged that some details of the leak location were provided, he did not have a clear understanding of the leak nor its location. He also knew that the SIT 1A was not currently exhibiting any indication of abnormal leakage and relied on the corrective action process to ensure that the information was routed for impact and operability review.

7. CORRECTIVE ACTIONS:

The following corrective actions have been implemented:

- A repair consisting of adding a new weld with a reinforcing partial fillet weld to attach the nozzle at the outer surface of the vessel was completed. The design of the new configuration complies with the design and construction Code (ASME Section III, 1974 edition through Winter 74 Addenda).
- An analysis performed on the original flaw and determined that the worst case flaw would not propagate such that the structural integrity of the new weld or the tank boundary would be affected.
- ASME Relief Request 39 was submitted on July 11, 2008, for the original weld on the inner surface that was left in place.
- The vent nozzle connections on the other three SITs in Unit 1 were inspected using the snoop method and no leakage was detected.
- The Containment Entry at Power procedure, 40DP-9ZZ01, will be revised to add expectations for Operations personnel regarding operational impact of negative findings in containment.

Work Orders were initiated to evaluate the condition of the SITs in Units 2 and 3.

Any additional corrective actions taken as a result of this event will be implemented in accordance with the APS corrective action program. If information is subsequently developed that would significantly affect a reader's understanding or perception of this event, a supplement to this LER will be submitted.

8. PREVIOUS SIMILAR EVENTS:

No similar conditions have been reported in the prior three years.