10 CFR 50.73

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102-07382-MLL/DJH
November 21, 2016

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 2016-003-00

Enclosed please find Licensee Event Report (LER) 50-528/2016-003-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports an inoperable containment isolation valve for longer than the Limiting Condition of Operation completion time.

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.

Arizona Public Service Company makes no commitments in this letter. If you have questions regarding this submittal, please contact Mark McGhee, Nuclear Regulatory Affairs Department Leader, at (623) 393-4972.

Sincerely,

Lacal, Maria L(Z06149)

Digitally signed by Lacal, Maria L(Z06149)
DN: cn=Lacal, Maria L(Z06149)
Date: 2016.11.21 13:55:42 -07'00'

MLL/DJH/akf

Enclosure

cc: K. M. Kennedy NRC Region IV Regional Administrator
S. P. Lingam NRC NRR Project Manager for PVNGS
C. A. Peabody NRC Senior Resident Inspector PVNGS

NRC FORM 366 (06-2016) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Palo Verde Nuclear Generating Station (PVNGS) Unit 1	05000528	1 OF 5

4. TITLE

Inoperable Containment Isolation Valve SGA-UV-1134 Due to Failure to Close During Testing

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
09	21	2016	2016	-003	-00	11	21	2016	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
100	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Mark McGhee, Regulatory Affairs Department Leader	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
A	MS	FCV	R344	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

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

On September 21, 2016, at 0142 Mountain Standard Time (MST), containment isolation valve SGA-UV-1134 failed to stroke closed from the control room during containment isolation valve testing. The failure resulted in an unplanned entry into Technical Specification Limiting Condition of Operation (LCO) 3.6.3, Containment Isolation Valves. On September 22, 2016, it was concluded the valve was in a configuration that rendered the pneumatic operator incapable of operating the valve, including remote operation and automatic closure in the event of a main steam isolation system signal. The valve had been in this configuration since last operated on June 28, 2016. Therefore, the valve was inoperable longer than the required 4-hour completion time of LCO 3.6.3 Condition C. On September 22, 2016, at 1457 MST, SGA-UV-1134 was properly closed, declared operable, and LCO 3.6.3 was exited.

This event was caused by human error when procedural guidance was not used to return SGA-UV-1134 to its neutral locked configuration following testing on June 28, 2016. Actions have been initiated to ensure proper procedural guidance is used to lock SGA-UV-1134 in the future.

On June, 26, 2015, LER 50-530/2015-002 reported a condition prohibited by LCO 3.0.4 that occurred on May 1, 2015, when Unit 3 entered Modes 4 and 3 while in the applicability of LCO 3.7.4. On May 2, 2015, automatic dump valve, SGB-HV-178, was stroked with steam while in Mode 3 and discovered to be inoperable due to human error incurred during post-maintenance assembly prior to entering Mode 4.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Palo Verde Nuclear Generating Station (PVNGS) Unit 1	05000528	2016	- 003	- 00

NARRATIVE

1. A REPORTING REQUIREMENT(S):

This condition is reportable pursuant to 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by Technical Specification Limiting Condition of Operation (LCO) 3.6.3, Containment Isolation Valves and for changing Modes while in the applicability of LCO 3.6.3 without meeting the exceptions of LCO 3.0.4.

With a required containment isolation valve (CIV) inoperable, LCO 3.6.3 Condition C requires that the containment penetration flow path for a penetration requiring only one CIV must be isolated within 4 hours by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. Failure to meet this action requires entry into LCO 3.6.3 Condition E by placing the plant in Mode 3 within 6 hours and in Mode 5 within 36 hours.

On September 22, 2016, SGA-UV-1134, Steam Trap SGN-M24 Inlet Isolation Valve, was determined to have been in a configuration that precluded it from automatically closing on a Main Steam Isolation Signal (MSIS) between June 28, 2016, and September 21, 2016. SGA-UV-1134 was inoperable for that period which exceeded the time allowed by LCO 3.6.3.

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

The main steam system (MS) (EIIS Code: SB) contains two 28-inch main steam lines for each of the two steam generators (EIIS Code: AB). One Main Steam Isolation Valve (MSIV) (EIIS Code: SB) is installed in each main steam line outside of, but close to the containment building in the main steam support structure building. The four MSIVs are downstream of the main steam safety valves (EIIS Code: SB), atmospheric dump valves (EIIS Code: SB), and auxiliary feedwater (AF) (EIIS Code: BA) pump turbine steam supply valves to prevent those components from being isolated from the steam generators by MSIV closure. One-inch steam traps protect the MSIVs and the AF pump turbine from water impingement damage by draining condensation upstream of the MSIVs to the main condenser.

For containment isolation, MS is considered a closed system as the steam generator tubes are credited as a passive device for containment isolation. Therefore, only one CIV is installed in each flow path from the MS header to the environment to mitigate a radiological release resulting from steam generator tube leakage. SGA-UV-1134 (Flowserve Valtek, model Mark One) is a one-inch CIV upstream of steam trap SGN-M24 that services the main steam line between Steam Generator 2 and MSIV SGE-UV-171. SGA-UV-1134 can be closed locally using its installed handwheel or remotely from the control room by way of its pneumatic “air” actuator. The air actuator for SGA-UV-1134 is engaged only when the valve is placed in its “neutral” position by rotating the valve handwheel clockwise until it

reaches its open stop and then rotating it counter-clockwise one quarter to one half turn. The handwheel is then locked to prevent unauthorized repositioning of the valve and a functional stroke of the valve is performed remotely to verify proper operation.

When in its neutral position, the air actuator for SGA-UV-1134 will automatically close the valve on an MSIS signal. The MSIS, generated by the engineered safety features actuation system (EIIS Code: JE), ensures 10 CFR 100 limits are not exceeded in the event of a steam generator tube rupture by closing the MSIVs and main feedwater Isolation valves. The MSIS also prevents the unaffected steam generator from feeding steam into a high energy line break. An MSIS can be generated by high containment pressure, low steam generator pressure, or high steam generator water level. Following closure from an MSIS, SGA-UV-1134 can be reopened if it is determined that the steam trap is necessary to support operation of the main steam line.

3. INITIAL PLANT CONDITIONS:

On September 21, 2016, PVNGS Unit 1 was in Mode 1 (Power Operation) at 100 percent power, normal operating temperature, and normal operating pressure. There were no other structures, systems, or components inoperable at the time of the event that contributed to the event.

4. EVENT DESCRIPTION:

On September 21, 2016, SGA-UV-1134 failed to stroke closed from the control room during routine containment isolation valve testing. On September 22, 2016, maintenance personnel determined the valve handwheel was not in its neutral position. This rendered the air operator incapable of closing the valve. Because the valve handwheel was locked in place, it was evident the valve had been left in this configuration when it was last manually cycled on June 28, 2016, to support routine valve testing.

The station's locked valve procedure places applicable valves in their proper locked configuration following an outage and ensures they are returned to their proper locked configuration if they must later be unlocked. When valves are unlocked, they are included on a locked valve verification checklist (change record). The change record is an appendix of the locked valve procedure and is used in the field to track unlocked valves and document (through two person verification) that they are returned to their proper locked configuration. A change record starts as a blank checklist that is populated with a description of the valve to be unlocked and its proper locked configuration. This information is transcribed directly from the locked valve procedure master checklist. For most valves, the locked configuration is simply "closed" or "open" and restoration is completed at the direction of a valid technical document by locking the valve according to the change record. Only the change record, as an appendix to the locked valve procedure, is required to be in the field in this case.

However, to lock SGA-UV-1134 the master checklist includes references to additional steps in the body of the locked valve procedure that must be performed. Therefore, to lock SGA-UV-1134, both a change record and a copy of the locked valve procedure are required and must be present in the field. Contrary to this requirement, on June 28, 2016, verifiers (two APS plant operators) opened and locked SGA-UV-1134 as per the restoration directions of the valve test technical document in lieu of proper procedural guidance. Because both operators were unfamiliar with the valve actuator and because the change record was improperly prepared (did not include references to additional procedural steps required to lock SGA-UV-1134), they assumed that all procedural instructions had been met by opening and locking the valve. Both plant operators had received a pre-job brief; however, there was no mention of the need to perform steps from the body of the locked valve procedure and the operators were not prompted to take a copy of the procedure into the field with them. As a result, SGA-UV-1134 was not restored to its neutral position and the air actuator was not engaged.

During the period that SGA-UV-1134 was inoperable, Unit 1 was manually shut down and entered Mode 4 on September 9, 2016, due to a failed main pressurizer spray valve and returned to full power operation on September 12, 2016 (LER 1-2016-002). During startup, mode changes were made under the applicability of LCO 3.6.3 without meeting the LCO conditions or the exceptions of LCO 3.0.4.

5. ASSESSMENT OF SAFETY CONSEQUENCES:

This event did not result in a potential transient more severe than those analyzed in chapters 6 and 15 of the Updated Final Safety Analysis Report (UFSAR) or result in the release of radioactive materials to the environment. There were no actual safety consequences or negative affect to the health and safety of the public as a result of this condition.

SGA-UV-1134 is not credited in the PVNGS accident analysis calculations to limit the consequences of a radiological release to within the limits of 10 CFR 50, Appendix A General Design Criteria 19, General Design Criteria for Nuclear Power Plants, and 10 CFR 100, Reactor Site Criteria. Releases through penetrations smaller than two inches in diameter cannot result in a large early radioactive release event and would be limited to small radioactive releases following an accident resulting in core damage. The failure of SGA-UV-1134 does not impact core damage accident sequences in the probabilistic risk assessment and is bounded by the stuck open atmospheric dump valve accident discussed in UFSAR chapters 6 and 15.

Probabilistic risk assessment indicates the nuclear safety risk significance of this condition is minimal. This event is not reportable as a safety system functional failure pursuant to 10 CFR 50.73 (a)(2)(v). SGA-UV-1134 is on the secondary side of the steam generator, which

is credited as a closed system for purposes of containment isolation.

6. CAUSE OF THE EVENT:

This event was caused by human error when procedural guidance was not used to return SGA-UV-1134 to its neutral locked configuration following testing on June 28, 2016.

Contributing to this event, the locked valve procedure contained no specific direction for preparing the field change record for locking SGA-UV-1134. Had the references to procedural steps been transcribed into the change record exactly as they appeared in the procedure master checklist, the plant operators would have been prompted to use the locked valve procedure.

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.

7. CORRECTIVE ACTIONS:

Upon discovery, the condition was corrected by locking the manual actuator for SGA-UV-1134 in its neutral position according to procedural guidance and successfully completing a surveillance test to demonstrate proper operation.

An Operations Department Night Order was issued to address the specific human performance errors and lessons learned from this event.

To prevent recurrence, a step was added to the station's locked valve procedure to require that change records generated for SGA-UV-1134 and other similar CIVs include references to all necessary procedural steps to properly configure them prior to locking.

Additional training is planned to enhance plant operators' knowledge of the design of this valve actuator.

8. PREVIOUS SIMILAR EVENTS:

On June, 26, 2015, LER 50-530/2015-002 reported a condition prohibited by LCO 3.0.4 that occurred on May 1, 2015, when Unit 3 entered Modes 4 and 3 while in the applicability of LCO 3.7.4. On May 2, 2015, automatic dump valve, SGB-HV-178, was stroked with steam and discovered to be inoperable due to human error incurred during post-maintenance assembly prior to entering Mode 4.