



**MARIA L. LACAL**  
Senior Vice President  
Nuclear Regulatory and Oversight

**Palo Verde  
Nuclear Generating Station**  
P.O. Box 52034  
Phoenix, AZ 85072  
Mail Station 7605  
**Tel** 623 393 6491

102-07337-MLL/SPD  
September 16, 2016

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

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS) Unit 3  
Docket No. STN 50-530 / License No. NPF 74  
Licensee Event Report 2016-001-00**

Enclosed please find Licensee Event Report (LER) 50-530/2016-001-00 that has been prepared and submitted pursuant to 10 CFR 50.73. This LER reports a condition prohibited by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.11, Control Room Essential Filtration System (CREFS). This condition resulted in a CREFS air filtration unit being inoperable greater than the LCO Required Action Completion Time. The event investigation to determine the cause of this condition is in progress. A final disposition will be provided in a supplement to this LER which will be submitted upon completion of the event investigation.

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,

MLL/SPD/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



**LICENSEE EVENT REPORT (LER)**

(See Page 2 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 and Information Collections Branch (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.

<b>1. FACILITY NAME</b> Palo Verde Nuclear Generating Station (PVNGS) Unit 3	<b>2. DOCKET NUMBER</b> 05000530	<b>3. PAGE</b> 1 OF 4
---	-------------------------------------	--------------------------

**4. TITLE**  
Control Room Essential Filtration System Air Filtration Unit Failure Resulting in a 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
07	01	2016	2016	001	00	09	19	2016		05000
									FACILITY NAME	DOCKET NUMBER
										05000

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

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT Mark McGhee, Department Leader, Nuclear 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	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
	VI	HJ		Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR
		11	18	2016

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

On July 20, 2016, PVNGS received Unit 3 "B" train (3B) Control Room Essential Filtration Unit (AFU) carbon sample test results that exceeded the acceptance criteria of the Technical Specification (TS) Ventilation Filter Testing Program. The Unit 3 Control Room (CR) staff declared the AFU inoperable and entered TS Limiting Condition for Operation (LCO) 3.7.11, Control Room Essential Filtration System (CREFS).

The investigation determined the 3B CREFS AFU was inoperable since June 24, 2016, when the initial carbon sample was taken, which exceeded the Required Action Completion Time for Conditions A and C of LCO 3.7.11 on July 01, 2016. The carbon filter replacement and testing was completed and the Unit 3 CR staff declared the 3B CREFS AFU operable on July 24, 2016.

The event investigation is still in progress, and the results will be reported in a supplement to this Licensee Event Report.

No previous similar events have been reported by PVNGS in the last three years.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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 and Information Collections Branch (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.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Palo Verde Nuclear Generating Station (PVNGS) Unit 3	05000530	YEAR	SEQUENTIAL NUMBER	REV NO.	2	OF
		2016	- 001	- 00		

**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) to report a condition prohibited by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.11, Control Room Essential Filtration System (CREFS)(EIS:VI). Palo Verde Nuclear Generating Station (PVNGS) received Unit 3 "B" train (3B) CREFS air filtration unit (AFU) carbon sample test results that exceeded the TS Ventilation Filter Testing Program (VFTP) acceptance criteria on July 20, 2016, for a sample obtained on June 24, 2016.

The investigation determined the 3B CREFS AFU was inoperable since June 24, 2016, when the initial carbon sample was taken, which exceeded the Required Action Completion Time for Conditions A and C of LCO 3.7.11.

July 01, 2016, is the event date when the LCO Required Action Completion Time expired without restoration of the inoperable CREFS AFU. A final disposition will be provided in a supplement to this LER which will be submitted upon completion of the investigation.

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

The control room (CR) heating, ventilation, and air conditioning (HVAC) system (HJ) consists of normal and essential systems that provide suitable environmental conditions for the CR complex for all normal and abnormal operations. This system is required to maintain temperatures to support a comfortable environment for CR personnel as well as provide adequate cooling to plant equipment, protect the CR staff from intrusion of poisonous gases, smoke or airborne radioactivity, and ensure the CR area has appropriate conditions for prolonged occupancy through the duration of postulated events. These functions are achieved through the use of one normal ventilation system and two redundant safety systems.

The CR HVAC system includes the CREFS which consists of two separate, seismically qualified, redundant essential flow trains. Each flow train consists of an AFU with a series of filters to process intake airflow and recirculate air flow to the CR envelope. Low leakage ductwork and dampers are provided to minimize unfiltered air in-leakage. The CR post-accident habitability requirements are met by either CREFS train.

The B train CREFS shares ductwork with the CR normal (non-essential) ventilation system and both serve the inverter room and communication room during non-emergency conditions. The normal air handling unit ductwork, inverter room, and communication room are automatically isolated from the train B CREFS upon a control room essential filtration actuation signal.

The A train CREFS does not supply the inverter room or the communication equipment room, nor does it share ductwork with the normal ventilation or B train CREFS except for final CR outlet ducts.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE		
Palo Verde Nuclear Generating Station (PVNGS) Unit 3	05000530	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 4		
		2016	- 001	- 00			

**NARRATIVE**

The CREFS AFUs are each designed with a fan, pre-filter, two high-efficiency particulate air (HEPA) filters, and a carbon adsorption filter. The purpose of the carbon filter is to filter out radioiodine during postulated accident situations via a chemical reaction between the iodine activated carbon. The carbon is tested every 18-months in accordance with TS Surveillance Requirement (SR) 3.7.11.2 and TS Program 5.5.11, VFTP. This surveillance requirement involves sending a representative carbon sample to a laboratory for testing per ASTM D3809-1989, Standard Test Method for Nuclear-Grade Activated Carbon.

TS LCO 3.7.11 requires two CREFS trains be OPERABLE during Modes 1, 2, 3, 4, 5, 6, and during movement of irradiated fuel assemblies. The Required Action for Condition A, for a single inoperable train for reasons other than an inoperable control room envelope boundary, specifies restoration of the inoperable train within 7 days. Condition C requires entry into Mode 3 if the Required Action is not completed. Additionally, if the Required Action for Condition A is not met, Condition E requires the Operable CREFS train be placed in essential filtration mode or immediate suspension of irradiated fuel movement if an operable CREFS train is not immediately placed in the essential filtration mode.

**3. INITIAL PLANT CONDITIONS:**

On July 01, 2016, PVNGS Unit 3 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 out of service that contributed to these events.

**4. EVENT DESCRIPTION:**

On June 24, 2016, a carbon sample was obtained from the Unit 3 "B" train CREFS AFU in accordance with TS SR 3.7.11.2 and the VFTP and sent offsite for testing per ASTM D3809-1989. On July 20, 2016, PVNGS received the carbon sample test results that exceeded the TS VFTP acceptance criteria. Unit 3 CR staff declared the 3B CREFS AFU inoperable and entered TS LCO 3.7.11, CREFS.

PVNGS engineering personnel questioned the departure of the test results from the expected carbon efficiency trend and a second carbon sample was obtained on July 20, 2016, and sent offsite for testing. The results of this test also exceeded the TS VFTP acceptance criteria. An emergent change-out of the carbon filter began on July 22, 2016, and the carbon filter replacement and testing was completed and the Unit 3 CR staff declared the 3B CREFS AFU operable on July 24, 2016.

The investigation determined the 3B CREFS AFU was inoperable since June 24, 2016, when the initial carbon sample was taken, which exceeded the Required Action Completion Time for Conditions A and C of LCO 3.7.11.

July 01, 2016, is the event date when the LCO Required Action Completion Time expired without restoration of the inoperable CREFS AFU. An event investigation is in progress to determine the cause of this condition and establish corrective actions.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Palo Verde Nuclear Generating Station (PVNGS) Unit 3	05000530	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 4
		2016	- 001	- 00	

**NARRATIVE**

**5. ASSESSMENT OF SAFETY CONSEQUENCES:**

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

The nuclear safety risk significance associated with the subject condition was minimal. The degraded CREFS AFU filtration capability impacts design basis requirements regarding CR staff dose in design basis accidents. However, the condition has minimal impact on actual risk due to: (1) remaining margin in the filters capable of limiting doses from design basis events to those which will not create acute health effects and (2) the availability of portable air breathing devices to minimize the dose impacts from elevated CR airborne radionuclides in design basis and beyond design basis events. In addition, the likelihood of events creating radioactive releases capable of causing acute health effects to the CR staff assuming no CREFS AFU capability is very small (< 2E-6 per year) based on the probabilistic risk assessment model results.

The event would not have prevented the fulfillment of a safety function and the condition did not result in a safety system functional failure as defined by 10 CFR 50.73 (a)(2)(v). A final disposition will be provided in a supplement to this LER which will be submitted upon completion of the event investigation.

**6. CAUSE OF THE EVENT:**

The event investigation is still in progress. The cause of this condition will be reported in a supplement to this LER.

**7. CORRECTIVE ACTIONS:**

As an immediate corrective action, the CREFS AFU filter bed was replaced and testing was completed. The CREFS AFU was declared operable on July 24, 2016.

The event investigation is still in progress. The corrective actions will be reported in a supplement to this LER.

**8. PREVIOUS SIMILAR EVENTS:**

No similar conditions have been reported by PVNGS in the last three years.