



10 CFR 50.90

Palo Verde Nuclear
Generating Station

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102-04632-CDM/TNW/JAP
December 13, 2001

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2 and 3
Docket Nos. STN 50-528/529/530
Request for Amendment to Technical Specification
5.5.11 – Ventilation Filter Testing Program (VFTP)**

Dear Sirs:

Pursuant to 10 CFR 50.90, Arizona Public Service Company (APS) hereby requests the following amendment to Technical Specification 5.5.11.d, Ventilation Filter Testing Program (VFTP), for each Palo Verde Nuclear Generating Station (PVNGS) Unit. The proposed amendment discussed in the following attachments would lower the maximum allowable differential pressure across the Engineered Safety Features (ESF) Ventilation System units when tested at specified system flowrates. This is necessary due to revised system calculations.

Based on the responses to the three criteria provided for determining whether a significant hazard consideration exists as stated in 10 CFR 50.92, APS has concluded that the proposed amendment involves no significant hazard consideration.

In accordance with the PVNGS Quality Assurance Program, the Plant Review Board and Offsite Safety Review Committee have reviewed and concurred with this proposed amendment. By copy of this letter, this request is being forwarded to the Arizona Radiation Regulatory Agency (ARRA) pursuant to 10 CFR 50.91(b)(1).

A001

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Page 2

APS requests that the enclosed Technical Specification amendment request be reviewed and approved by October 1, 2002, with an allowance of 60 days for implementation of the approved amendment.

No commitments are being made to the NRC by this letter.

Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,



CDM/TNW/JAP

Enclosures:

- Notarized Affidavit
- APS' evaluation of proposed changes

Attachments:

1. Markup of Technical Specification page
2. Retyped Technical Specification page
3. Associated Changes to the Updated Final Safety Analysis Report (for information only)

cc:	E. W. Merschoff	(NRC Region IV)	(all w/Attachments)
	L. R. Wharton	(NRR Project Manager)	
	J. H. Moorman	(NRC Sr. Resident Inspector)	
	A. V. Godwin	(ARRA)	

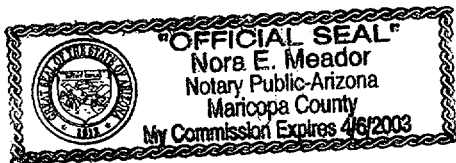
STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, David Mauldin, represent that I am Vice President Nuclear Engineering and Support, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

David Mauldin
David Mauldin

Sworn To Before Me This 13th Day Of December, 2001.

Nora E. Meador
Notary Public



Notary Commission Stamp

APS' EVALUATION

Technical Specification 5.5.11.d, Ventilation Filter Testing Program (VFTP)

- 1.0 Description
- 2.0 Proposed Change
- 3.0 Background
- 4.0 Technical Analysis
- 5.0 Regulatory Safety Analysis
- 6.0 Environmental Consideration
- 7.0 References
- 8.0 Precedents

1.0 DESCRIPTION

This letter is a request to revise Technical Specification (TS) 5.5.11, "Ventilation Filter Testing Program (VFTP)" for Palo Verde Nuclear Generating Station Units 1, 2, and 3.

Proposed changes to the Updated Final Safety Analysis Report (UFSAR) associated with this license amendment request have been prepared and are provided in Attachment 3 for information only.

2.0 PROPOSED CHANGE

The proposed Technical Specification (TS) amendment will change the allowable pressure drop values for the Engineered Safety Function (ESF) ventilation systems units. These values are listed in TS 5.5.11.d. The allowable differential pressure (D/P) value for the Control Room Essential Filtration System (CREFS) units will change from "[less than] 8.4 inches water gauge" to "[less than or equal to] 4.8 inches water gauge" at the specified system flowrate. The allowable D/P value for the ESF Pump Room Exhaust Air Cleanup System (PREACS) units will change from "[less than] 8.4 inches water gauge" to "[less than or equal to] 5.2 inches water gauge" at the specified system flowrate.

3.0 BACKGROUND

Each PVNGS unit is equipped with two identical 100% capacity, physically separated high efficiency filtration trains with charcoal adsorbers that are provided to process intake air flow and recirculated air flow in the control room. The system designation for the control room ventilation system is HJ. These units are designated as the Control Room Essential Filtration System (CREFS) units. These units are normally in a shutdown (standby) lineup. In the event of a specified emergency signal such as a Control Room Ventilation Isolation Actuation Signal (CRIVAS), Control Room Essential Filtration Actuation Signal (CREFAS), Safety Injection Actuation Signal (SIAS), or Loss of Offsite Power (LOP), there will be automatic actuation of the essential air handling units (CREFS units). The CREFS units operate during an emergency condition to ensure that control room habitability is maintained. This system is described in UFSAR section 6.4.

The fuel building heating, ventilation and air conditioning (HVAC) system consists of two 100% capacity exhaust charcoal filtration units. The system designation for the fuel building ventilation system is HF. Each unit exhausts air from the fuel building to the fuel building vent to prevent release of airborne radioactivity to the environment in case of a fuel handling accident. These essential exhaust trains are also connected through a Seismic Category I plenum and tunnel to the auxiliary building ESF equipment rooms. Separate dampers are provided for this service. These units would be utilized to create low pressure in the auxiliary building (below elevation 100 feet 0 inch) and thus prevent release of unfiltered air from the auxiliary building due to ESF system leakages following

a loss of coolant accident (LOCA). These units are designated as the ESF Pump Room Exhaust Air Cleanup System (PREACS). These same units are also designated as the Fuel Building Essential Ventilation System (FBEVS). This system is described in UFSAR section 9.4.

The CREFS and the PREACS/FBEVS air filtration units (AFUs) were initially sized to deliver a design airflow rate of 28,600 cubic feet per minute (cfm) and 6000 cfm, respectively, at a postulated maximum dirty filter condition of 8.4 inches of water gauge (iwg). In the initial manufacturer fan blade set up, the fans with their filter units in a normal clean condition would deliver higher airflow rates and corresponding higher air velocities which exceed those required to meet the 0.25 second residence time for the charcoal filter. The residence time requirement is based on a 2" charcoal adsorber bed depth.

NRC Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," allows a 10% tolerance in airflow, to envelope maximum design air flow conditions, resulting in a bounding air face velocity value of 44 ft/min. at the charcoal adsorber. This face velocity corresponds to a 2" charcoal adsorber bed depth and provides the 0.25 second nominal residence time in the charcoal.

The residence time requirements for the charcoal adsorber filter are delineated by Regulatory Guide 1.52, Rev.2, March 1978, position C.3.i, to ensure the adsorption efficiency for the removal of airborne radioactivity. The adsorption efficiency of the charcoal bed and residence time is a direct input into the plant radiological dose calculations.

During startup testing of these units, the fan pitch blade settings were adjusted to reduce the airflow rate. This lowering of the airflow rate was not well documented in the startup test reports. This reduction in airflow capacity was deemed necessary at the time because operating with a residence time of less than 0.25 seconds would result in a lower than 95% adsorption efficiency for the charcoal filter. Thus, the lower corresponding adsorption efficiency of the charcoal filter, for inorganic and organic iodine, if used in the radiation dose analysis would result in a higher dose consequence.

Due to lack of written documentation after the fans were adjusted during startup testing, it could not be concluded that the flow conditions to meet the residence time were met.

In order to resolve this issue, calculations 13-MC-HF-0902 and 13-MC-HJ-0804 were developed to adequately document the design basis of the AFUs. These analyses establish a new lower design dirty filter D/P to ensure that the AFUs are capable of delivering the design flows at 100% maximum dirty filter condition and also are able to meet the adsorber residence time when the filters are clean.

Since these new lower design dirty filter differential pressures are more conservative than those currently allowed by TS, the plant procedures have been updated to reflect the lower limits.

4.0 TECHNICAL ANALYSIS

Technical Specification 5.5.11, Ventilation Filter Testing Program (VFTP) establishes a program for requiring testing of ESF filter ventilation systems in accordance with appropriate regulatory guidance.

Palo Verde Nuclear Generating Station (PVNGS) calculation 13-MC-HJ-0804 and 13-MC-HF-0902 were developed to document the design basis and testing standard positions that PVNGS has taken concerning the CREFS AFUs and PREACS/FBEVS AFUs.

These calculations established a new lower design dirty filter D/P to ensure that the AFUs are capable of delivering the design flows at 100% maximum dirty filter condition and also able to meet the adsorber residence time when the filters are clean. Design margin of the AFUs is validated via analyses performed in the referenced calculations and confirmed by the various startup and surveillance tests.

Additionally, calculations 13-MC-HJ-0804 and 13-MC-HF-0902 address the effects that the emergency diesel generator frequency and voltage variations could have on the airflow and residence time of the AFUs. The variations in voltage and frequency from the emergency diesel generator does result in slight variations in airflow and adsorber residence time during clean and dirty filter conditions. However, there is no impact to the required design bases flow and residence time. The essential AFUs performance can still be evaluated through the current surveillance testing performed in accordance with the VFTP.

The analyses established a more restrictive design criteria than that which is currently listed in TS 5.5.11.d. The new D/P limit for the CREFS AFUs is less than or equal to 4.8 inches water gauge. The new D/P limit for the PREACS/FBEVS AFUs is less than or equal to 5.2 inches water gauge. This applies to all three of the PVNGS units. Each PVNGS unit consists of two CREFS AFUs and two PREACS/FBEVS AFUs.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Determination

Arizona Public Service company (APS) has evaluated whether or not a significant hazards consideration is involved with the proposed changes by focusing on the three standards set forth in 10 CFR 50.92 as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

Technical Specification (TS) 5.5.11, Ventilation Filter Testing Program (VFTP) establishes a program for requiring testing of Engineered Safety Feature (ESF) filter ventilation systems in accordance with appropriate regulatory guidance.

PVNGS calculations 13-MC-HJ-0804 and 13-MC-HF-0902 were developed to document the design basis and testing standard positions that Palo Verde Nuclear Generating Station (PVNGS) has taken concerning the Control Room Essential Filtration System (CREFS) air filtration units (AFUs) and the ESF Pump Room Exhaust Air Cleanup System (PREACS) AFUs. These calculations established a lower design dirty filter differential pressure (D/P) to ensure that the AFUs are capable of delivering the design flows at 100% maximum dirty filter condition and also able to meet the adsorber residence time when the filters are clean. Design margin of the AFUs is validated via analyses performed in the referenced calculations and confirmed by the various startup and surveillance tests.

The analyses established a more restrictive design criteria than that which is currently listed in TS 5.5.11.d. The new D/P limit for the CREFS AFUs is less than or equal to 4.8 inches water gauge (iwg). The new D/P limit for the PREACS AFUs is less than or equal to 5.2 iwg. This applies to all three of the PVNGS units. Each PVNGS unit is equipped with two CREFS and two PREACS AFUs.

These essential AFUs are not event initiators. The essential CREFS and PREACS AFUs are used to mitigate the consequences of a postulated accident as discussed in Updated Final Safety Analysis Report (UFSAR) Sections 15.6 and 15.7. The proposed change in filter D/P for dirty filter conditions does not increase the probability of an accident previously evaluated.

The accident analyses that could be affected by the proposed changes to the CREFS and PREACS AFUs are addressed in the calculations which determine the expected radiological doses in the control room, at the Exclusion Area Boundary (EAB), and in the Low Population Zone (LPZ) resulting from postulated accidents. The efficiency of the essential AFU filter and charcoal adsorber as well as adsorber residence time and airflow rate are required parameters to evaluate the removal of radioactive gases and particulates from the postulated accidents evaluated in UFSAR Chapter 15. However, the proposed changes to the essential AFUs D/P limits ensure that PVNGS remains within existing licensing bases for radiological consequences of fuel handling accidents and LOCA events.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The purpose of the essential AFUs (CREFS and PREACS) is to mitigate the consequences of an accident and as such, they are not plant accident initiators. The proposed changes in filter D/P limits for these essential AFUs do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operations. The proposed changes in the filter D/P limit for dirty filter conditions ensure that PVNGS remains within existing licensing bases for radiological consequences of fuel handling accidents and LOCA events and are not initiators of any new or different kinds of accidents.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response No

The proposed change in the allowed maximum D/P across the filter in a dirty condition is a more conservative and restrictive change (less than or equal to 4.8 inches of water (iwg) for the CREFS units and 5.2 iwg for the PREACS units) than the current value of "less than 8.4 iwg" in Technical Specification 5.5.11.d. Under these conditions, the AFUs are required to deliver the design flows at a lower maximum D/P, which increases the structural safety margin of the filters. At the same time, the charcoal adsorber residence time requirements are met for the higher fan flowrate achieved with clean filters. The variations in diesel generator output voltage and frequency and its effects on the airflows and adsorber residence time are bounded by the design value parameters as demonstrated in calculations 13-MC-HJ-0804 and 13-MC-HF-0902. As such, the proposed changes ensure that PVNGS remains within existing licensing bases.

Therefore, the proposed change does not involve a reduction in a margin of safety.

Based on the above evaluations, APS concludes that the activities associated with the above described changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92 and accordingly, a finding by the NRC of no significant hazards consideration is justified.

6.0 ENVIRONMENTAL CONSIDERATION

Arizona Public Service Company has evaluated the proposed changes and has determined that the changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may

be released offsite, or (iii) a significant increased in the individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

7.0 REFERENCES

- 1) ANSI/ASME N510 – 1980 &1989 Standards
- 2) ANSI/ASME Standard N509-1980
- 3) Regulatory Guide 1.52, Rev.2, March 1978

8.0 PRECEDENT

None cited.

Attachment 1

MARKED-UP TECHNICAL SPECIFICATION PAGE

Units 1, 2, and 3;

Page: 5.5-19

5.5 Programs and Manuals (continued)

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

- d. For each of the ESF systems, demonstrate the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is less than ~~or equal to~~ the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the system flowrate specified as follows $\pm 10\%$:

<u>ESF Ventilation System</u>	<u>Delta P</u>	<u>Flowrate</u>
CREFS	4.8 - 8.4 inches water gauge	28,600 CFM
ESF PREACS	5.2 - 8.4 inches water gauge	6,000 CFM

- e. Demonstrate that the heaters for each of the ESF systems dissipate the following specified value when tested in accordance with ANSI N510-1980:

<u>ESF Ventilation System</u>	<u>Wattage</u>
ESF PREACS	> 19 kW

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides control for potentially explosive gas mixtures contained in the Waste Gas Holdup System, the quantity of radioactivity contained in gas storage tanks and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure". The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures".

(continued)

Attachment 2

RETYPE TECHNICAL SPECIFICATION PAGE

Units 1, 2, and 3;

Page: 5.5-19

5.5 Programs and Manuals (continued)

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

- d. For each of the ESF systems, demonstrate the pressure drop across the combined HEPA filters, the prefilters, and the charcoal adsorbers is less than or equal to the value specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the system flowrate specified as follows $\pm 10\%$:

<u>ESF Ventilation System</u>	<u>Delta P</u>	<u>Flowrate</u>
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<u>ESF Ventilation System</u>	<u>Wattage</u>
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(continued)

Attachment 3

RETYPE
UPDATED FINAL SAFETY ANALYSIS REPORT
(for information only)

Page: 6.5-5

FISSION PRODUCT REMOVAL
AND CONTROL SYSTEMS

F. Table 6.5-1

ESF FILTER SYSTEM DESIGN PARAMETERS

Component	Units Installed	Units Required for Operation	Unit Capacity
Control room essential ventilation system			
Essential air handling units	2	1	
Fans per unit	1	1	
Capacity, ft ³ /min			28,600
Allowed pressure drop across filters, in. WG			4.8
Motor, hp			125
Prefilter banks per unit	1	1	
Capacity, ft ³ /min			28,600
HEPA filter banks per unit	2	2	
Capacity, ft ³ /min			28,600
Charcoal filter backs per unit	1	1	
Capacity, ft ³ /min			28,600
Fuel building essential ventilation system			
Essential air handling units	2	1	
Fans per unit	1	1	
Capacity, ft ³ /min			6,000
Allowed pressure drop across filters, in. WG			5.2
Motor, hp			40
Prefilter banks per unit	1	1	
Capacity, ft ³ /min			6,000
HEPA filter banks per unit	2	2	
Capacity, ft ³ /min			6,000
Charcoal filter banks per unit	1	1	
Capacity, ft ³ /min			6,000